

6.2 Strategy Development and Deployment

6.2.1 The institutional Strategic plan is effectively deployed.

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रानी दुर्गावती विश्वविद्यालय, जबलपुर (म.प्र.)
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(NAAC Accredited B⁺⁺ University, 2002-2007)

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क्रमांक/कुलपति कार्यालय/2020/...481

दिनांक : 29 जून, 2020

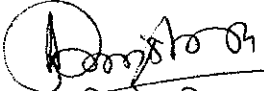
अधिसूचना

विश्वविद्यालय शिक्षण विभागों से प्राप्त जानकारी के आधार पर विश्वविद्यालय का विजन-2030 तैयार करने हेतु निम्नलिखित सदस्यों की एक समिति का गठन किया जाता है :-

- | | |
|--|-----------|
| 1. प्रो. अंजना शर्मा, समन्वयक, आई.क्यू.ए.सी. | - समन्वयक |
| 2. प्रो. एस.एन. बागची, आचार्य, बायो साइंस विभाग | - अध्यक्ष |
| 3. प्रो. शैलेश कुमार चौबे, आचार्य, अर्थशास्त्र विभाग | - सदस्य |
| 4. प्रो. राकेश बाजपेयी, आचार्य, भौतिकी विभाग | - सदस्य |


उक्त समिति विश्वविद्यालय का विजन-2030 तैयार कर दिनांक 02 जुलाई, 2020 तक माननीय कुलपति जी के समक्ष प्रस्तुत करेगी।

मान. कुलपति जी के आदेशानुसार,


कुलपति के सचिव

प्रतिलिपि-

1. समिति के सदस्यों को सूचनार्थ एवं पालनार्थ ।
2. प्रभारी कम्प्यूटर सेटर, रा.दु.वि.वि., जबलपुर को सूचनार्थ ।
3. कुलसचिव जी के निज सहायक, रा.दु.वि.वि., जबलपुर को सूचनार्थ ।


कुलपति के सचिव

Rani Durgavati University, Jabalpur

1.	Vision	Creating an ideal society and an intellectual domain that initiates, nourishes and perpetuates values of human, conscious co-existence and achievement of excellence.
2.	Mission	To provide quality education, develop human resource and improve literacy and socio-economic status of society as a whole in general and deprived sections of our society in particular.
3.	About the University	<p>The University established under Jabalpur University Act on 12th June 1956 was rechristened in 1983 as Rani Durgavati University. It encompasses within its ambit the districts of Jabalpur, Katni, Mandla, Dindori and Narsinghpur with 242 affiliating colleges having a combined strength of 2 lac and 10 thousand students. Starting from a handful of departments the University boasts today of 27 teaching departments, 9 Study Centers falling under faculties of Social Science, Science, Mathematical Science, Life Science, Management, Law, Education and Arts. Various departments of the University have since inception been continuously engaged in teaching, research and extension activities garnering international acclaim. The University boasts of a UGC Human Resource Development Center rated 5th all India. After a tough all India competition the University was awarded several acclaimed centers of repute. Among them are the National Resource Center in Political Science and a Design and Innovation Center. Both these Centers have been doing pioneering work in their respective areas.</p> <p>Over 70 percent of the population living in the catchment area is tribal and socio-economically backward. The literacy rate of this area at 51.6 % is below the national average. It is virtually the fulcrum around which development of the region hinges at the same time by promoting cultural heritage the University acts as a beacon of our rich cultural past to the world.</p> <p>The very nomenclature of the University after the valorous Gond queen Rani Durgavati signifies, recognition and establishment of the very best in values and traditions pertaining to Indian womanhood.</p> <p>Under the 'विश्वविद्यालय गाँव की ओर योजना' the University has adopted village 'Dobi' for all around development as a social responsibility. As part of its culture promotion activities the University has been sending cultural groups for participation in various national and international events. Its Ahir Nritya troupe has won international laurels.</p>

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		<p>University teachers and students regularly participate in national/international academic programmes with due recognitions as evidenced by awards and recognitions.</p> <p>There is a string of luminaries who have visited the University including greats like Dr Sarvapalli Radhakrishnan, Pt Jawahar Lal Nehru, Dr Abdul Kalam, Prof Yash Pal and their likes.</p> <p>Similarly it has several illustrious alumni spread all over the World. The University started it's sojourn with Pt Kunji Lal Dubey as it's first Vice Chancellor through to the present day Vice Chancellor Prof Kapil Deo Mishra.</p> <p>Situated in the lap of nature with Sita pahadi forming lush green backdrop the University indeed provides the ideal serene environment for an educational institution. The University is situated in the tribal heartland of the country and as such carries a special onus towards which it is fully informed.</p>
4.	<p>Strategic vision</p> <p>A. Outstanding research Objectives, Targets, Strategy</p>	<ul style="list-style-type: none"> • Life Science : Molecular Taxonomy, Epigenetics and Metagenomics, Analytical Biochemistry for Drug Development, System Biology and Bioinformatics. • Science : Centre of excellence in Materials Science. Computatinal Physics and Electronics Design and synthesis of drugs, metal based anticancer drugs, metal nitrosyl complexes as antihypertensive and antihypertensive agents, metal complexes as antioxidant and antidiabetic agents, Characterization & evaluation of toxicants in the presenc of metal oxide nanoparticles mediated by chromogenic reagents, Monitoring of environmental pollutants. • Mathematical Science : Approximation theory, Harmonic Analysis, Topology, Fixed Point theory, Wavelet theory, Fuzzy Mathematics, Computer Aided Geometric Design, Software Metrics, Software Architecture, Software Modeling and Mathematical Modeling. • Software Engineering. Data Analysis and Data Science, Cloud Computing, Image Processing, Forensic Science and Ethical Hacking. • Education : Sports Psychology, Sports Sociology, Sports Biomechanics. Measurement and Evaluation in Physical Education and Sports., Exercise and Sports Physiology, Sports Management. Anthropometry, Identification and development of sports talent • Lifestyle management, Wellness, Nutrition, Philosophy, Psychologys, as an adjunct to modern medicine and as alternate

therapy.

- **Arts** : Metaphysics, Epistemology, Ethics, Logics, Religion, Applied Ethics, Social Ethics, Comparative Philosophy, Comparative Religion.

- Journalism and mass communication, Print media, Electronic media, Rural and tribal development, Social and cultural communication, Web journalism.

(B) Targets: Hospitals, Research Institutes, Industries, Government Organizations & Non Government Organizations related Social Science & Economic Development, Rural Development, Companies, Universities etc.

(C) Strategy: Collaboration will be established with all above Research proposals will be submitted both at faculty and departmental level to address above issues. MOU will be established with targeted Industries and institutions. Sophisticated Instrumentation labs-will be established. Further strategies for HR development, Collaboration, Off-campus engagements, Extensive writing practice etc. will be formulated and applied.

B. Excellence in Teaching and learning Targets, Strategy

(i) Development of e-contents.

(ii) Establishment of E-library, E-lectures, E-conferences, Webinars, etc.

(iii) Increase experimental learning opportunities with practical skills and training.

(iv) Developing and enhancing partnerships with the digital media libraries and other academic units that will enable to expand the technology content of the curriculum.

(v) Providing online education to students along with class room and on-field teaching. Focus on observable and measurable student outcomes in an environment that provides support for students' social, emotional, and academic needs.

(vi) Planning curricula by understanding the importance of the character of our students, their learning experience and outcomes, and the college counseling program.

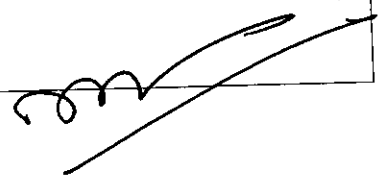
(vii) Building on the existing strengths of the academy's use of information technology to benefit the learning outcomes of our students.

Targets: Startups and Incubation centers, Industries Non-Government & Government Organizations and skilled teachers for Universities.


		<p>Strategy: Students will be admitted for integrated or independent M.Sc.-P.hD programmes and other innovative masters programmes and in beginning small projects will be assigned by way of workshops, online learning and innovative thinking. Research will be integral component of teaching-learning and students will be exposed to outstanding institutes. This is apart from basic computer training (languages) and diverse core and optional subjects mentioned above.</p>
	<p>C. Social responsibility targets, strategy</p>	<p>Spreading awareness and providing services by organizing :</p> <p>(i) Free yoga camps like yoga, Blood donation, Social awareness, Health awareness drive etc.</p> <p>(ii) workshops in different areas.</p> <p>Targets: Hospitals, Research Institutions, Industries, NGO's, IT Institutions etc.</p> <p>Strategy: Periodically short-term training programmes and summer school will attract mid-term professionals. As joint ventures, internships under MOU with above organizations will be undertaken using the facilities of the department and in turn our students will get hands on training in those organizations.</p> <p>Extensive consultancy and training programmes will be undertaken for generating skilled human resource from other organizations.</p>
5.	Enabling strategy for vision 2030	
	<p>A Access to information</p>	<ul style="list-style-type: none"> • Virtual library and access to online periodicals is a must and subscription to PubMed, Scopus-Science Direct, EBSCO will be planned out. We shall enrich Library facility with server, specialized software and LAN for access to online material. • Website and Webpage creation and any relevant instruction of UGC will be followed.
	<p>B Campus facilities</p>	<ul style="list-style-type: none"> • WIFI Facilities • Video Conferencing facility • More Class Rooms construction and Individual Building • Infrastructure for Data Bank • Extend Library facility with computer books including text books and online facility to access the library as well as Journals.
	<p>C GreenCampus</p>	<p>Development of a botanical garden with rare plants and</p>

		medicinally important herbal and tree species. Cataloguing of the useful trees in campus and uploading in the University Website. This can follow a digital green map of the city.
	D Infrastructure development	<ul style="list-style-type: none"> • Development of exclusive student labs with furnishing and resources such as most general purpose equipments, routine chemicals and reagents, Hood and other air-vent facility, • To establish Theater • Television production studio/Centralised facility for audio-video recording to develop e-contents. • Community Radio • Digital newspaper • Digital lab with Wi-Fi • Online Video conferencing facility • multifunction printers • photoquality colour printers • podium mike public address systems • overhead projectors
	E Faculty / administrial appointment	<p>Requirement -</p> <p>Professor - 12 Assoicate Professor - 18 Assisstant Professor - 30</p> <p>Administrative Staff</p> <p>Computer Professionals - 30 Technical staff - 30</p>
	F Faculty development	<p>(i) Organisation of faculty development progammes & workshop Refresher & Orientation courses.</p> <p>(ii) Publication of research papers in high impact factor and h-indexed International/National journal every year by faculty.</p> <p>(iii) Professional development for teachers can take on various forms. Some professionals engagement in workshops, training, seminars.</p>
	G Atmanirbhar bharat	<p>(i) The students will be monioered to inculcate self-reliance by way of taking challenges for startups so as to cater diverse sectors.</p>

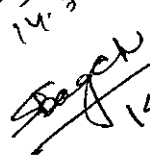
		(ii) The curriculum developed will make the students self sufficient.
	New Course	<ul style="list-style-type: none"> ● PG Diploma and Certificate Courses in subjects like Cyber Crime, IPR, ADR and Human Rights, International Trade law etc. ● LL.M. in other streams like Business law, IPR, Environmental Law, Family Law. ● In UG courses: B.Com.LL.B. (Honours) and B.BALL.B. (Honours). ● M.A./M.Sc. in G.I.S. & Remote Sensing ● P. G. Diploma in Tourism ● P. G. Diploma in G.I.S. & Remote Sensing ● Environmental Economics, Economics-Finance and Banking, Advanced Program in Digital Economy, Quantitative Methods for Economics of Public Policy can be launched. ● Diploma Programmes in Job demand area will be launched ● Certificate Programmes in Chartered Economist, Industrial Economics and NGO will be preferred to launch ● Master degree course in Data Science and Artificial Intelligence, Diploma courses in Machine and deep learning by using python and R, Data Science and AI also Planning to start certificate courses in Web Application, Mobile Application Development ● Diploma in human rights, nation building, geopolitical studies. ● Certificate courses for government officials as well as people involved in public relations. ● Gandhi Shodh Peeth, Ambedkar Shodh Peeth, Bhartiya Gyan Shodh Peeth. ● Diploma in gym trainer. ● B.A. Women Studies ● P. G. Diploma in Early Childhood Care ● Certificate Course in Driving ● Certificate Course in Personality Development ● Certificate Course in Empowering Women through Self Help Groups ● Certificate Course in Understanding Gender ● Short Term Course in Legal Literacy ● Short Term Course in Computer Literacy ● Short Term Course in Mushroom Cultivation ● Short Term Course in Floriculture ● M.Sc. (Tech). Material Science ● B.Sc. (Hons.) Physics ● Integrated M.Sc. Physics ● M.Sc. (Tech). Instrumentation ● Integrated M.Sc. Life Science

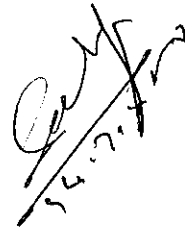


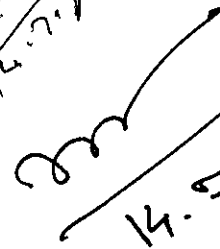
Total Budget required	Total 142 Crore 93 lakhs 50 thousand
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रानी दुर्गावती विश्वविद्यालय, जबलपुर (म.प्र.)

दृष्टि पत्र

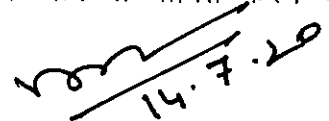
रानी दुर्गावती विश्वविद्यालय की स्थापना 1956 में जबलपुर विश्वविद्यालय के नाम से एक सम्बद्धता प्रदायी विश्वविद्यालय के रूप में हुई थी। जिसके प्रमुख उद्देश्य, शिक्षण, शोध एवं प्रसार गतिविधियाँ सम्पन्न करना था। सन् 1983 में इसका नाम महान् गोंड जनजातीय सम्राज्ञी रानी दुर्गावती के नाम पर पड़ा। यह मात्र प्रतीकात्मक संयोग नहीं वरन् भारतीय नारीत्व की अजेय शक्ति की मुक्त उड़ान, उसके अदम्य शौर्य एवं जनजातीय समुदाय के विकास के प्रति समाज की प्रतिबद्धता एवं निष्ठा की स्थापना थी। रानी दुर्गावती विश्वविद्यालय देश के जनजातीय हृदय स्थल में अवस्थित है और यही तथ्य इसे संभावनाओं की पराकाष्ठा और हमारे वृहत्तर सामाजिक उद्देश्यों के प्रति समर्पण का साक्षी बनाता है।

भारत में स्वतंत्रता पश्चात् के दशक में हमारे नीति निर्माताओं ने दूरदृष्टि से समूचे देश में उच्च शिक्षण संस्थाओं की स्थापना की। इसके पीछे उद्देश्य था कि देश के सामाजिक आर्थिक रूप से पिछड़े हुए क्षेत्रों में भी सामाजिक परिवर्तन की बयार निर्बाध रूप से बहे जिससे राजनीतिक, आर्थिक एवं सामाजिक विकास इस विशाल और बहुरंगी राष्ट्र के प्रत्येक दरो-दराज को आलोकित कर सके। इसी पावन कार्य जो कि वृहत्तर राष्ट्रहित को अपने में समेटे हुए है, की परिणति हेतु रानी दुर्गावती विश्वविद्यालय अपने स्थापनाकाल से सतत् प्रयत्नशील है। इसी संदर्भ में विश्वविद्यालय का दृष्टि एवं ध्येय है:

दृष्टि: एक आदर्श समाज की रचना जो ऐसे बौद्धिक सार्वभौम का सृजन एवं पोषण करे जो मानवता, चैतन्य सहअस्तित्व एवं उत्कृष्टता के मूल्यों को निरंतरता प्रदान करे।

ध्येय: सामान्य समाज एवं विशिष्ट रूप से समाज के वंचित वर्गों को उत्कृष्ट शिक्षा प्रदान करना मानव संसाधन का विकास एवं साक्षरता में वृद्धि।

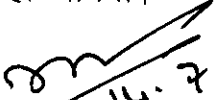
विश्वविद्यालय का कार्यक्षेत्र आठ बड़े जिलों तक फैला है जिनमें लगभग एक करोड़ की आबादी रहती है। भौगोलिक दृष्टि से यह क्षेत्र पहाड़ी है और कई स्थानों पर घने जंगल से आक्षादित है। पवन सलिला नर्मदा नदी इसी क्षेत्र को पोषित करती हुए आगे खम्भात की खाड़ी में सागर से मिल जाती है। अपार नैसर्गिक सौंदर्य एवं दुर्लभ जड़ी बूटियों के लिए प्रसिद्ध इस क्षेत्र के विकास में रानी दुर्गावती विश्वविद्यालय का अपूरणीय योगदान रहा है। विश्वविद्यालय की परिसीमा के अंतर्गत आने वाले महाविद्यालयों एवं विश्वविद्यालय शिक्षण विभागों में लगभग दो लाख विद्यार्थी आज पंजीकृत हैं। विश्वविद्यालय से सम्बद्धता प्रदत्त 225 महाविद्यालय हैं जिनमें तीन उत्कृष्ट कोटि एवं सात स्वशासी कोटि के हैं। विश्वविद्यालय में 24 मुख्य धारा विभाग हैं एवं 2 अन्य भ्रूण अवस्था में हैं। इन विभागों में 110 अकादमिक कार्यक्रम जिनमें 24 एम.फिल, 27 पीएच.डी., 12 व्यवसायी स्नातक स्तर के कार्यक्रम संचालित हैं। इस प्रकार एक अत्यन्त विस्तृत एवं दुरुह क्षेत्र की शैक्षणिक रूप से पोषित करने का


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कार्य यह विश्वविद्यालय अपने स्थापनाकाल से कर रहा है। इसी पृष्ठभूमि से भविष्य के दृष्टि पत्र का सूत्रपात होता है।

विश्वविद्यालय के दृष्टि पत्र के दो प्रमुख आयाम हैं—शिक्षा के क्षेत्र में उत्कृष्टता एवं सामाजिक परिवर्तन। इन दोनों उद्देश्यों की पूर्ति हेतु भविष्यगामी दृष्टि से विश्वविद्यालय ने अनेक योजनायें संचालित कर रखी हैं और कुछ नियोजित हैं। इन योजनाओं का एक संक्षिप्त विवरण इस प्रकार है:—


1. डिजिटल इंडिया की तर्ज पर विश्वविद्यालय की कार्य प्रणाली को कागज विहीन बनाने की दिशा में कार्य प्रारंभ हो चुका है और 2020 तक यह कार्य सम्पन्न कर लिया जायेगा।
2. प्रवेश प्रक्रिया एवं परीक्षाओं को पूर्णतः 'आनलाइन' करने का उपक्रम संचालित है जिसे आने वाले वर्षों में पूर्णतः लागू कर दिया जायेगा। इस दिशा में 'आनलाइन' परीक्षा संबंधी एक "पायलट परियोजना" संचालित हो चुकी है।
3. प्रत्येक विभाग में 'स्मार्ट-क्लासरूम' की योजना है जिससे विद्यार्थी विश्व स्तरीय शिक्षण तकनीकी से लाभान्वित हो सकें।
4. केन्द्रीय ग्रंथालय पूर्णतः डिजीटलाइज होने की दिशा में अंतिम चरण में है।
5. कैम्पस पूरी तरह ग्रीन एवं प्लास्टिक रहित हो। कम से कम 10,000 पेड़ लगाने की योजना है जिससे कैम्पस एक आदर्श स्थान पर्यावरण की दृष्टि से विकसित हो सके।
6. जल संग्रहण एवं सोलर एनर्जी का प्रयोग कर विश्वविद्यालय परिक्षेत्र को क्लीन एनर्जी से परिपूर्ण बनाये जाने की योजना है।
7. शिक्षा में उत्कृष्टता हेतु सी.बी.सी.एस. लागू करने की दिशा में विश्वविद्यालय ने पूरी तैयारी कर ली है। यह व्यवस्था 2016-17 सत्र में लागू हो जायेगी।
8. विश्वविद्यालय अनेक नवीन व्यवसायिक एवं बहुउपयोगी शैक्षणिक कार्यक्रम संचालित कर रहा है जैसे बी.वाक., कम्युनिटी कालेज के अंतर्गत अनेक डिग्री डिप्लोमा कार्यक्रम। इन्हीं में से एक अभिनव पहल 'डिजाइन इनोवेशन सेंटर' जो कि विश्वविद्यालय को भारत सरकार द्वारा कठिन चयन प्रक्रिया सम्पन्न करने के पश्चात् प्राप्त हुआ है। आई.आई.टी. के बाद रानी दुर्गावती विश्वविद्यालय प्रथम विश्वविद्यालय है जिसे अखिल भारतीय स्तर पर यह सेंटर दिया गया है। व्यवहारिक शोध जो उपयोगी हो, इस दिशा में डी.आई.सी. एक अभिनव पहल है।
9. क्षेत्र की आर्थिक-सामाजिक संरचना को दृष्टिगत रखते हुए संभव है कि सभी को उच्च शिक्षा का लाभ लेने में कठिनाई हो। ऐसे में विश्वविद्यालय दूरस्थ शिक्षण संचालनालय को पुष्ट कर रहा है। जिससे उच्च शिक्षा वंचित लोगों के दरवाजे तक सीधे पहुँचायी जा सके। अगले पाँच वर्षों में इसके अंतर्गत कम से कम 30000 विद्यार्थियों को जोड़ने का लक्ष्य रखा गया है। दूरस्थ शिक्षा की संभावनाओं को देखते हुए ऐसी अपेक्षा है कि इसके कारण विश्वविद्यालय की आर्थिक स्थिति भी सुदृढ़ हो जायेगी।


14.2.20

10. 'स्किल्ड इंडिया' के तर्क को गति प्रदान करते हुए विश्वविद्यालय में कौशल विकास केन्द्र संचालित किया जा रहा है। भविष्य में विद्यार्थियों को रोजगार उपलब्ध कराने की दिशा में यह केन्द्र महत्वपूर्ण भूमिका का निर्वहन करेगा। इसी के अंतर्गत योजना है विश्वविद्यालयीन शिक्षण विभागों को देश-विदेश की अर्थव्यवस्था से जैविक संबंध के द्वारा जोड़ा जायेगा।
11. शैक्षणिक, शोध एवं प्रसार गतिविधियों में उत्कृष्टता लाने हेतु आई.क्यू.ए.सी. प्रकोष्ठ की भूमिका पुष्ट की जायेगी एवं इस संदर्भ में वस्तुनिष्ठ मानकों के आधार पर मूल्यांकन एवं उचित फीडबैक देकर प्रत्येक संरचना को बौद्धिक उत्पाद की दृष्टि से उपयोगी बनाया जायेगा।
12. विश्वविद्यालय देशी एवं विदेशी शिक्षण संस्थानों से एम.ओ.यू. के आधार पर अपने शिक्षक एवं विद्यार्थियों को ग्लोबल दृष्टि प्रदान करेगा जिससे उनका प्रसार वैश्विक हो सके और बाह्य अनुभव से विश्वविद्यालय लाभान्वित हो एवं विश्वविद्यालय का उत्पाद बाहरी जगत को उपलब्ध हो सके।
13. शिक्षा में उत्कृष्टता के साथ भारत जैसे सामाजिक आर्थिक विषमताओं वाले देश में समतामूलक समाज की स्थापना एवं सामाजिक परिवर्तन एक अपरिहार्य प्रयोजन है। इस दृष्टि से भी विश्वविद्यालय के विभिन्न अकादमिक कार्यक्रमों एवं शोध की विषयवस्तु तथा प्रसार कार्यक्रमों की ऋद्धंखला नियोजित है। जो कि सामाजिक परिवर्तन की प्रक्रिया को पुष्ट करेगी।
14. जनजातीय अंचल में अवस्थित होने के कारण विश्वविद्यालय जनजातीय प्रधान शोध अध्ययन को प्रोत्साहित करता रहा है। इसी संदर्भ में जनजातीय विभाग को पुष्टकर उसे विस्तारित करने की योजना है। जनजातीय संस्कृति, स्वास्थ्य व्यवस्था, जीवनशैली एवं जेनेटिक शोध विश्वविद्यालय के 'दृष्टि पत्र' का अभिन्न भाग है।

ज्ञान हमें नैसर्गिक सीमाओं एवं मानव जनित सामाजिक-आर्थिक सीमाओं से मुक्ति प्रदान करता है। इस ज्ञान के प्रचार-प्रसार एवं भेदभावन रहित विस्तार का दायित्व उच्च शिक्षण संस्थानों का ही है। ऐसे में रानी दुर्गावती विश्वविद्यालय का दायित्व कई गुना बढ़ जाता है। अपनी विशिष्ट भौगोलिक स्थिति के कारण विश्वविद्यालय का कार्य कठिन एवं चुनौतीपूर्ण है। विश्वविद्यालय अपने सामाजिक दायित्व के प्रति सर्वथा सचेत है और अपने कार्यों के स्वरूप एवं विषयवस्तु दोनों ही दृष्टियों से प्रयत्नशील है। आशा ही नहीं विश्वास है कि विश्वविद्यालय अपने सभी दायित्वों का निर्वहन करने में सफल होगा।

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14.7.20

रानी दुर्गावती विश्वविद्यालय
Rani Durgavati Vishwavidyalaya



(Formerly, University of Jabalpur)
(NAAC Accredited Grade "B" University)

सरस्वती विहार, पचपेढी, जबलपुर-482001 (म.प्र.)
Saraswati Vihar, Pachpedi, Jabalpur-482001 (M.P.)

Programme outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) of the Programmes offered by the Institution



Department of PG Studies and Research in Ancient Indian History, Culture and Archaeology

Programme Offered

1. M.A. Ancient Indian History, Culture and Archaeology

M.A. Ancient Indian History, Culture and Archaeology

This criterion describes the level of knowledge and understanding, skills and competencies, attitudes and values which a student of M.A. Ancient Indian History, culture and Archaeology occupies after the completion of the programme. The programme has been designed for the learning experiences and assessment procedures to be applied in such a way that the student gets a fair opportunity to attain the intended program learning outcome. The qualification descriptors would mirror the understanding and knowledge related to Ancient Indian History, culture and Archaeology as well as the generic skills including global competencies which the student of this programme shall acquire. The student after the completion of the program should be able to apply the disciplinary knowledge and transferable skills acquired to new context and should be able to identify and analyse problems and seek solutions to them in real life situations. He should be able to apply the acquired subject-related skills to employment opportunities.

PROGRAMME OUTCOMES:

- PO-1. Critical Thinking:** Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication:** Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction:** Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship:** Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics:** Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability:** To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning:** It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMME SPECIFIC OUTCOMES:

The programme specific outcomes relating to M.A. Ancient Indian History, culture and Archaeology Programme are given as under:

- PSO-1.** Demonstrate a set of basic skills of communication and explication of the subject practices with clarity.
- PSO-2.** Demonstrate a coherent and systematic knowledge of the field of Ancient Indian History, culture and Archaeology showing an understanding of various civilizations and cultural developments in relation to the specific field of the subject.
- PSO-3.** Display an ability to understand various antiquities and their importance.
- PSO-4.** Display an ability to find out Archaeological sites for excavation.
- PSO-5.** Display an ability to survey of Archaeological and Historical sites.

SEMESTER - I

Paper I Elements of Indian Archaeology

Course Outcomes

Students will be able to identify the major characteristics and demonstrate in-depth knowledge of Elements of Indian Archaeology.

- CO-1.** Analyse scope of the course, and relation with other fields of knowledge.
- CO-2.** Learn methods of exploration and excavation.
- CO-3.** Collect and maintain records of antiquities.
- CO-4.** Learn methods of conservation and preservation of antiquities.

Paper II Political History of Ancient India from Vedic Age to 550 AD

Course Outcomes

- CO-1.** Develop a basic understanding of Historical sources.
- CO-2.** Students will be gaining the ability to understand chronological knowledge of Vedic and Mahajanpada age.
- CO-3.** Develop a basic knowledge of political conditions, republic states, rise of empire, invasion and its effects.
- CO-4.** Students will be gaining knowledge about rise of a first and biggest empire of ancient India. Develop a clear understanding about political condition ancient India.

Paper III Political History of Ancient India from 550 AD TO 1206 AD

Course Outcomes

- CO-1.** Students will be able to trace the rise of different dynasties.
- CO-2.** Understand and examine the elements of the Vardhan and early Chalukya dynasty.
- CO-3.** Students will be able to gain a chronological knowledge of various dynasties.

Paper IV Ancient Indian Culture

Course outcomes

- CO-1.** Students will be able to gain a knowledge of cultural unity of India.
- CO-2.** Understand and creatively engage with the traditions of ancient India.
- CO-3.** To understand cast and education system.
- CO-4.** Students will be able to understand the Administration, political ideas and institutions of ancient India.

SEMESTER - II

Paper I Elements of Indian Archaeology

Course outcomes

- CO-1.** Students will be able to enhance and diversify their knowledge acquired in Stone age cultures in India.
- CO-2.** Identify the major characteristics and demonstrate in-depth knowledge of stone age.
- CO-3.** Students will learn about Harappan culture.
- CO-4.** Students will learn and study about Iron Age antiquity, pottery and Rock paintings.

Paper II Political History of Ancient India from Vedic Age To 550 A.D.

Course outcomes

- CO-1. Students will be able to develop a basic understanding of the history of western India.
- CO-2. Develop a basic understanding of political condition of south India.
- CO-3. Develop a basic understanding of political condition of north India.
- CO-4. Students will be able to develop a basic understanding of the dynasties of India.

Paper III Political History of Ancient India from 550 AD To 1206 AD

Course outcomes

Students will be able to gain a basic knowledge of the dynasties of early medieval India.

Paper IV Ancient Indian Culture

Course outcomes

Students will be able to gain a basic knowledge of the ancient literature, religion and philosophy.

SEMESTER III

Paper I Ancient Indian Palaeography and Epigraphy

Course outcomes

- CO-1. Students will be able to gain a basic knowledge and learn about origin and development of ancient script.
- CO-2. Students will learn to read and translate the inscriptions.
- CO-3. Students will be able to gain a basic knowledge about administration, political, social, economical life of ancient India.

Paper II Ancient Indian Numismatics

Course outcomes

- CO-1. Students will be able to gain a basic knowledge about origin, antiquity and importance of coins in the reconstruction of history.
- CO-2. Coin's study also informs about weapons, flags, religious beliefs, wealth of the dynasty.
- CO-3. Students will be able to know making process of coins, ratio of metals and shape-size of coins in ancient India.

Paper III Ancient Indian Art and Iconography

Course outcomes

- CO-1. Students will be able to gain a basic knowledge about sculptures of the ancient and early medieval India.
- CO-2. Students also know the development and characteristic features of sculptures.
- CO-3. Students also know about schools of art and different images.

Paper IV Ancient Indian Architecture

Course outcomes

- CO-1. Students will be able to gain a basic knowledge about literary and archaeological sources of ancient Indian architecture.
- CO-2. Basic knowledge of town planning in ancient India. Basic understanding of origin and development of caves and temple architecture.

SEMESTER IV

Paper I -Ancient Indian Palaeography and Epigraphy

Course outcomes

- CO-1. Students will be learning methods of dating and use of numerals in ancient Indian inscriptions.
- CO-2. Students will be able to know about writing material in ancient Indian era.
- CO-3. By reading and translation of inscriptions students know chronology, victories, administration and

Paper II – Ancient Indian Numismatics

Course outcomes

- CO-1.** Students studied coins and they know the qualities of coins from different dynasties.
- CO-2.** Through the coins study theyable know co-relation between two states, trade, rise and fall of the dynasties.
- CO-3.** Students will be able to know aboutweight of coins.
- CO-4.** Students will be able to know about clothes and ornaments wearing God- goddess and king-queenshown on coins.

Paper III- Ancient Indian Art and Iconography

Course outcomes

Students will be able to know characteristics features of iconography which is described in ancient texts.

Paper IV Ancient Indian Architecture

Course outcomes

- CO-1.** Students will be able to know the classification of ancient Indian temple architecture.
- CO-2.** They know the techniques ofarchitecture.
- CO-3.** Students will be able to know the material and types of stones used in templearchitecture.



Department of PG Studies and Research in Biological Science

Programme Offered

1. **B.Sc. (Hons.) BIOTECHNOLOGY**
2. **B.Sc. (Hons.) MICROBIOLOGY**
3. **M.SC. BIOSCIENCE**
4. **M.SC. BIOTECHNOLOGY**

B.Sc. (Hons.) BIOTECHNOLOGY

The aim of the undergraduate degree in Biotechnology is to make students knowledgeable about the various basic concepts in wide ranging contexts which involve the use of knowledge and skills of living entities and their manipulation. Their understanding, knowledge and skills in emerging biotechnological tools needs to be developed through a thorough teaching learning processes in the class, practical skills through the laboratory work, their presentation and articulation skills, exposure to industry and interaction with industry experts, write short research-based projects where they are guided and mentored by the academic and other experts of the subject.

PROGRAMME OUTCOMES

- PO-1.** Graduates should be able to do creative research and develop new technologies in the field of biotechnology, which can contribute to the industry and to academia.
- PO-2.** Graduates should be able to practice biotechnology engineering in a responsible, professional and ethical manner and implement eco-friendly sustainable technologies for the benefit of industry as well as society.
- PO-3.** Graduates obtain position in successful career in industry, research institutions, academic, government organizations and entrepreneurship.
- PO-4.** Graduates to be professionally competent in biotechnology to solve the problems in environmental, food, biochemical and biomedical engineering.
- PO-5.** Graduate to be able to interact with their peers in industry and society as engineering professionals and leaders to set up technical ambience in the society.

PROGRAMME SPECIFIC OUTCOMES

- PSO-1.** A candidate who is conferred B.Sc. (Hons) degree in Biotechnology needs to have acquired/developed following competencies during the programme of the study:
- PSO-2.** Acquired knowledge and understanding of the biotechnological concepts as applicable to diverse areas such as medical, industrial, environment, genetics, agriculture, food and related areas.
- PSO-3.** Demonstrate key practical skills/competencies in working with various biological entities for study and use in the laboratory as well as outside, including the use of modern molecular assessment and manipulation protocols.
- PSO-4.** Empower the students to undertake advance knowledge about biotechnological protocols and researches

SEMESTER I

PAPER I CODE UBC 101 BOTANY

Course Outcomes

CO-1. The student will be able to identify major groups of plants and compare the characteristics of algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.

CO-2. Students will be able to use the evidence based comparative botanical approach to explain the evolution of organism and understand the genetic diversity on the earth.

CO-3. Students will be able to understand adaptation, development, behaviour, morphology, anatomy and reproduction of different forms of life.

CO-4. Demonstrate proficiency in the experimental techniques and methods to study of algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.

CO-5. Students will be able to Understands concepts of Binomial Nomenclature and elementary knowledge of International Code of Botanical Nomenclature. Systematic position, distinguishing characters and economic importance of algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.

PAPER 2 CODE UBC 102: MICROBIOLOGY

Course Outcomes

Upon successful completion of the course, the students will

CO-1. Be acquainted with the historical account and development of microbiology as a scientific discipline.

CO-2. Have gained knowledge on different systems of classification. They will also acquire an overview of acellular and cellular microorganisms.

CO-3. Have acquired in-depth knowledge of the diversity, distribution, cell structure, life cycles and economic importance of algae.

CO-4. Have gathered detailed information on the diversity, distribution, structure, life cycles and economic importance of fungi.

CO-5. Be aware of general characteristics of protozoa and their economic importance and have a broad perspective of the scope of microbiology.

PAPER 3 CODE UBC 103: CHEMISTRY-I

Course Outcomes

CO-1. The students will learn about the principle, methodology, calculation and application involved in quantitative, chemical and spectrophotometric methods.

CO-2. The student shall learn the essential concepts of chirality, configuration, isomerism in organic chemistry and nomenclature of isomers. Students will familiarize with the elementary concept of saturated aliphatic hydrocarbons reactions

CO-3. The students shall learn about the fundamentals of organic chemistry with references to structure and reactivity, reagents and reactions & reaction and mechanism.

CO-4. The students will learn about ionic, covalent bonding in molecules. compare/contrast the properties of molecular and ionic compounds.

CO-5. The students will learn the elementary concepts of ionic chemical equilibrium with respect to acid – base, salt hydrolysis and solubility of ionic substances, including the IUPAC nomenclature, stereochemistry, structures, reactivity, and mechanism of the chemical reactions.

PAPER 4 ELECTIVE COURSE CODE UBE 101: COMMUNICATIVE ENGLISH

Course outcomes

Students will

CO-1. Improve LSRW, i.e. listening, speaking, reading and writing skills and the related sub-skills.

CO-2. Recognize and use formal elements of organizational communications: Paper writing, reports, proposals, memorandums, letters etc.

CO-3. Enhanced vocabulary with right pronunciation and improved accuracy in grammar.

CO-4. Effective oral presentations.

PAPER 5 ELECTIVE COURSE CODE UBE 102: FUNDAMENTALS OF STATISTICS

Course outcomes

CO-1. Students understand the importance of Sets, Functions and their graphs: polynomial, sine, cosine, exponential and logarithmic functions, and Sample observations. Sequences finite sequences.

CO-2. Students understand the intuitive idea of algebraic relationships and convergence, Infinite Geometric Series, Series formulas. Intuitive idea of discontinuity, continuity and limits.

CO-3. Students study the differentiation like Chain rule, Product rule and Quotient rule. Second order derivatives of above functions. Integration as reverse process of differentiation. Integrals of the functions introduced above.

CO-4. Student understands the points in plane and space and coordinate form. Examples of matrices of biological sciences

CO-5. Students' studies about central tendency, Measures of dispersion; skewness, kurtosis. Elementary Probability. Types variable, distribution, and variance. Correlation and Regression.

SEMESTER II

PAPER 1 CODE UBC 201: ZOOLOGY

Course Outcomes:

CO-1. Knowledge of classification of each phylum from protozoa to Annelida and Arthropoda to Echinodermata up to class level with examples.

CO-2. Understanding of characteristics and systematic position of classes of Chordata.

CO-3. Discuss different organ systems- respiration, digestion, excretion, and osmoregulation; the structure and function of the organs related. Understanding of composition, function, formation, clotting mechanism, type of blood cells & blood groups with activity of the heart.

CO-4. Conceptualise Nervous system and its components- neuron structure, nerve impulse transmission (Myelinated & Non-Myelinated), Neurotransmitters, Muscle-Types, Neuromuscular junction, sliding filament theory. Understanding of metabolism of carbohydrates, fats and proteins; sense organs and endocrine glands.

CO-5. Understanding human reproductive system- reproductive organs, female reproductive cycle, implantation, maternal change during pregnancy, labour and physiology of Lactation and methods of birth control.

PAPER 2 CODE UBC 202: BASICS OF COMPUTERS

Course outcomes

CO-1. The students shall learn about the introduction, basics, organization, types and preliminary knowledge of operating systems and system tools.

CO-2. Students will get the idea about data representation, networks terminologies, multimedia and its

applications.

CO-3. Students will get general awareness about the IT Act, system security and preliminary knowledge about the I-Tax, E banking and E reservations.

CO-4. They learn basics of algorithms and programming.

PAPER 3 CODE UBC 203: CHEMISTRY-II

Course Outcomes

CO-1. The students will learn about the energy and electromagnetic spectrum.

CO-2. The student shall learn the principle, theory and applications of UV Visible spectroscopy and Infrared spectroscopy.

CO-3. The students will get knowledge in the field of Electrochemistry special in references with Electrochemical cell, Nerst equation Gibbs energy.

CO-4. The students will learn general structure, configuration and properties of Carbohydrates, Amino acids, Proteins and Peptides.

PAPER 3 ELECTIVE CODE UBE 201: FUNDAMENTALS OF BIOCHEMISTRY

Course outcomes

CO-1. Study water and their properties, buffers, pH, acid, base, covalent bond and weak bonds, structure of atom.

CO-2. Enzyme, classification, structure, activity, inhibition, kinetics, allosteric enzymes etc.

CO-3. Structure and chemistry of Carbohydrate, protein, lipid, vitamins, pigments, antibiotics; functions, analysis.

CO-4. Biological membranes and Transport: membrane dynamics, solute transport across membranes.

CO-5. Biosignalling, signalling in microorganisms and plants, Bioenergetics and Metabolism; bioenergetics and thermodynamics, phosphoryl group transfers and ATP.

PAPER 4 ELECTIVE CODE UBE 202: BIOANALYTICAL TECHNIQUES

Course Outcomes

CO-1. Upon successful completion of the course, the student

CO-2. Will have identified the principle components of a light microscope, fluorescence microscope, phase contrast microscope, confocal and electron microscope, simultaneously learning about their principles and practical applications in visualizing, identifying and measuring cell, its components and biomolecules. The student will be familiar with staining and preparation of samples for microscopy.

CO-3. Will have gained an in-depth knowledge of principles and applications of paper chromatography, thin layer chromatography, gel filtration chromatography, ion-exchange chromatography, affinity chromatography, GC, HPLC. This enables the students to apply the acquired knowledge in isolation and separation of biomolecules for analysis.

CO-4. Will have learnt basic concepts of various techniques used to resolve and analyse nucleic acids and proteins - agarose gel electrophoresis, native polyacrylamide gel electrophoresis, SD polyacrylamide gel electrophoresis, isoelectric focusing, 2D gel electrophoresis, zymogram preparation.

CO-5. Will be able to understand absorption spectra of biomolecules, and will be able to interpret UV-visible and fluorescence spectroscopy outputs.

SEMESTER III

PAPER 1 CODE UBC 301: CELL BIOLOGY I

Course Outcomes

CO-1. Upon successful completion of the course, the student:

CO-2. Will have gained knowledge about features of the cell wall, plasma membrane, cell transport mechanisms and cytoskeleton.

CO-3. Will be able to understand the structures and functions of the nucleus and different cell organelles. The structural organization and function roles of chromatin will be learnt.

CO-4. Will have understood the mechanisms of protein sorting, intracellular trafficking, protein export.

CO-5. Will have gathered understanding of how cells perceive and respond to various signals from within and outside.

PAPER 2 CODE UBC 302: MOLECULAR BIOLOGY I

Course Outcomes

CO-1. Upon successful completion of the course, the student:

CO-2. Will be acquainted with the structure of various types of DNA and RNA as well as their organization as genetic material in various living organisms.

CO-3. Will gain an in-depth knowledge of DNA replication mechanisms in prokaryotes and eukaryotes, enzymes and proteins involved in replication.

CO-4. Will have learnt the fundamental principles of transcription in prokaryotes and eukaryotes, including the RNA polymerases and general transcription factors involved. Will be able to distinguish between the process in prokaryotes versus eukaryotes.

CO-5. Will understand the concept of split genes, introns, exons, spliceosomes and alternative splicing besides learning about other processing events like polyadenylation and capping. Will become familiar with RNA interference and its significance, siRNA and miRNA.

PAPER 3 CODE UBC 303: RECOMBINANT DNA TECHNOLOGY

Course Outcomes

CO-1. Upon successful completion of the course, the student

CO-2. Will get an overview of developments and contributions of scientists in the field of genetic engineering.

CO-3. Will get familiarized with basic cloning tools such as enzymes used to manipulate DNA, and cloning vectors.

CO-4. Will have learnt various gene delivery methods and basic essential techniques of DNA, RNA and protein analysis.

CO-5. Will gather in-depth knowledge of DNA amplification and sequencing methods, and become conversant with construction and screening of genomic and cDNA libraries.

PAPER 4 ELECTIVE CODE UBE 301: FUNDAMENTALS OF BIOPHYSICS

Course Outcomes

CO-1. Discuss molecular organization of different levels of protein and molecular structure of water- hydrogen bonds and physical property of water.

CO-2. Knowledge of storage, flow of energy and their applications-electrical properties of biological compartments; electrochemical gradients, membrane potential, chemiosmotic hypothesis.

CO-3. Application of law of optics in understanding strategies of light reception in microbes, plants and animals, correction of vision faults, generation and reception of sonic vibrations.

CO-4. Understanding Neurotransmitters, Intra and intermolecular interactions in biological system Spatial and charge compatibility as determinant of such interactions by applying laws of electricity.

CO-5. Knowledge of principle, design, methods and application of UV spectroscopy; circular Dichroism and optical rotatory dispersion (ORD); Fluorescence spectroscopy; Infrared spectroscopy; NMR and ESR

PAPER 5 ELECTIVE CODE UBE 302: FERMENTATION TECHNOLOGY

Course Outcomes

- CO-1.** To understand the basis of fermentation.
- CO-2.** To formulate and design the production media.
- CO-3.** Screening and selection of production strains.
- CO-4.** Operating and supervision of Fermenters.
- CO-5.** Designing of fermentation processes for the products recovery. Knowledge of Biosafety and patent laws

SEMESTER IV

PAPER 1 CODE UBC 401: IMMUNOLOGY (COURSE CREDIT= 03)

Course Outcomes

- CO-1.** Upon successful completion of the course, the student
- CO-2.** Will be acquainted with the emergence of immunology and how the immune system protects us from infection through various lines of defence. Will have gained an in-depth knowledge of characteristics and functions of the cells of the immune system and the organization of organs of the immune system.
- CO-3.** Can understand the characteristics that make the molecules to act as antigens. The students will also be conversant with the types, properties and functions of antibodies made against the antigens. Will be able to outline the production and use of monoclonal antibodies
- CO-4.** Will understand the cell surface proteins essential for generation of acquired immune response to differentiate self and non-self-molecules and the pathways for antigen processing and presentation.
- CO-5.** Will be acquainted with the mechanisms by which the complement system is recruited and enhances (complements) the ability of antibodies and phagocytic cells to clear microbes and damaged cells from an organism, promotes inflammation, and attacks the pathogen's cell membranes.

PAPER 2 CODE UBC 402: CELL BIOLOGY II

Course Outcomes

- CO-1.** Understanding of cell structure of prokaryotic and eukaryotic cell, apply knowledge of microscopic techniques for cell study.
- CO-2.** Knowledge of criteria of function integrity and structure of different cell organelles and transport of ions, nutrients and macromolecules across membranes.
- CO-3.** Empowers student to acquire knowledge about signal transduction pathway with understanding of different type of receptors and signalling molecules.
- CO-4.** Conceptualize cell cycle, cell division and cell death. Deep understanding of events of mitosis, apoptosis, embryonic stem cells and therapeutic cloning.
- CO-5.** Empowers student to acquire knowledge about biology of cancer its causes. Understanding of oncogenes, tumour suppressor gene, tumour viruses and molecular approach of cancer treatment.

PAPER 3 CODE UBC 403: MOLECULAR BIOLOGY II

Course outcomes

- CO-1.** RNA transcription in Prokaryotes and Eukaryotes, transcriptional regulation, RNA splicing and

editing, Protein synthesis, ribosome structure and assembly,

CO-2. Fidelity of translation. Inhibitors of protein synthesis. Regulation of translation Translation-dependent regulation of mRNA and Protein Stability.

CO-3. Transcription Regulation in Eukaryotes mechanisms, Signal integration, combinatorial control, transcriptional repressors, signal transduction, Gene Silencing

CO-4. Regulatory RNAs, Riboswitches, RNA interference, miRNA, siRNA, Regulatory RNA and X inactivation.

PAPER 4 ELECTIVE CODE UBE 401: GENETICS & GENOMICS I

Course Outcomes

CO-1. Upon successful completion of the course, the student will have

CO-2. Understanding Mendel's work on transmission of traits, Genetic Variation, Molecular basis of Genetic Information. The student will be able to correlate Mendel's ratios through Mitosis and Meiosis.

CO-3. Knowledge of Principles and theories of Inheritance, pedigree analysis, extensions of Mendelian Genetics; Incomplete and co dominance, Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, Environmental effects on phenotypic expression, sex linked inheritance.

CO-4. Deep understanding of crossing over and its Cytological and Molecular mechanism. They will be able to measure linkage intensity using Recombination frequency, two factor and three factor crosses, Interference and coincidence. Knowledge of somatic cell genetics an alternative approach to gene mapping.

CO-5. Conceptualize types of Mutation, its molecular basis of mutation and detection using Attached X method, DNA repair mechanisms.

PAPER 5 ELECTIVE CODE UBE 402: BIOINFORMATICS

Course outcomes

CO-1. Students get familiarized with hardware and software of modern computers. They understand system and application software.

CO-2. Students are exposed basics of bioinformatics and its tools.

CO-3. Students study various biological databases, retrieval of genetic and biomolecular sequences.

CO-4. Students learn various retrieval and alignment tools including construction of phylogenetic trees and annotations on sequences.

CO-5. Students learn about different techniques and tools of genome analyses and reconstruction of metabolic pathways.

SEMESTER V

PAPER 1 CODE UBC 501: PLANT BIOTECHNOLOGY

Course Outcomes

CO-1. Recall terms, definitions and history of in vitro cultures in our country. Describe embryo and endosperm culture, embryo rescue after wide hybridization and its applications.

CO-2. Knowledge of processes of plant regeneration under in vitro conditions and their practical application – organogenesis, somatic embryogenesis, meristem, Shoot tip culture and haploids.

CO-3. Conceptualize protoplast isolation, culture and various steps in the regeneration of protoplasts.

CO-4. Discuss various methods for fusing protoplasts- chemical and electrical. Define Cybrids and its application.

CO-5. List use of plant cell, protoplasts and tissue culture for genetic manipulation of plants and practical application of genetic transformation. Understanding of Tumour formation on plants using a tumefaciens (Monocots vs. Dicots).

PAPER 2 CODE UBC 502: ENVIRONMENTAL BIOTECHNOLOGY

Course Outcomes

- CO-1.** Deep understanding of existing and emerging technologies dealing with management of environmental quality and pollution.
- CO-2.** Empowers the students with the knowledge of municipal solid and liquid waste treatments, Classification of Wastes.
- CO-3.** Students will be able to learn about the renewable and non-renewable energy resources and clean fuel technologies.
- CO-4.** Students will be able to understand EIA and environmental audit.
- CO-5.** Conceptual understanding of global environmental problems- ozone depletion, UV-B greenhouse effects and global warming, acid rain, and their impacts and biotechnology approaches for management.

PAPER 3 CODE UBC 503: ANIMAL BIOTECHNOLOGY

Course Outcomes

- CO-1.** Deep understanding of animal cell culture substrate, culture media, preservation and maintenance of cell lines.
- CO-2.** Empowers the students with the knowledge of production of monoclonal antibodies, and bioreactors for large scale culture of cells.
- CO-3.** Students learn different growth factors promoting proliferation of animal cells (EGF, FGF, PDGF, IL-1, IL-2, NGF, and erythropoietin).
- CO-4.** Knowledge of transgenic animals, in vitro fertilization and embryo transfer.
- CO-5.** Conceptual understanding of Transplantation, Stem cells and its application.

PAPER 4 ELECTIVE CODE UBE 501: ENTREPRENEURSHIP & IPR

Course Outcomes

- CO-1.** Understanding entrepreneurship, human behaviour, business ethics, performance appraisal and (SWOT) analysis
- CO-2.** Knowledge of Market survey techniques with principles of product selection and development.
- CO-3.** Deciphering marketing and sales management; its characteristics and techniques.
- CO-4.** Understanding financial – institutions, incentives and statements; books of accounts.
- CO-5.** Application of technical feasibility of project, plant layout and process planning of product. QC, CPM, PERT for establishing SSI.

PAPER 5 ELECTIVE CODE UBE 502: GENETICS & GENOMICS II

Course Outcomes

- CO-1.** Knowledge of genetic analysis and mapping in Bacteria and Bacteriophages.
- CO-2.** Understanding of transposable element; prokaryotic, composite. Eukaryotic and uses of transposons.
- CO-3.** Conceptualize the mechanism of developmental biology and embryonic development of different model; *Drosophila melanogaster*, *Saccharomyces cerevisiae*, *Caenorhabditis elegans*, *Arabidopsis thaliana*, and *Xenopus* leaves.
- CO-4.** Understand different biological database that provide information about protein and nucleic acid, sequence similarity and alignment; Gene feature identification. Understanding of Gene Annotation and analysis of transcription and translation; post-translational analysis and Protein interaction.
- CO-5.** Knowledge of genetic analysis, system biology, functional genomics, forward and reverse genetics.

B.Sc. (Hons.) MICROBIOLOGY

PROGRAMMER OUTCOME

The aim of the undergraduate degree in Microbiology is to make students knowledgeable about the various basic concepts in a wide-ranging context which involve the use of knowledge and skills of Microbiology. Their understanding, knowledge and skills in Microbiology needs to be developed through a thorough teaching learning processes in the class, practical skills through the laboratory work, their presentation and articulation skills, exposure to industry and interaction with industry experts, write short research-based projects where they are guided and mentored by the academic and other experts of the subject.

- PO-1.** Graduates should be able to do creative research and develop new technologies in the field of Microbiology, which can contribute to the industry and to academia.
- PO-2.** Graduates should be able to practice Microbiology in a responsible, professional and ethical manner and implement eco-friendly sustainable technologies for the benefit of industry as well as society.
- PO-3.** Graduates obtain position in successful career in industry, research institutions, academic, government organizations and entrepreneurship.
- PO-4.** Graduates to be professionally competent in Microbiology to solve the problems in environmental, food, biochemical and biomedical engineering.
- PO-5.** Graduate to be able to interact with their peers in industry and society as engineering professionals and leaders to set up technical ambience in the society.

PROGRAMMER SPECIFIC OUTCOMES

A candidate who is conferred an UG (Hons) degree i.e., B.Sc. (Hons) degree in microbiology needs to have acquired/developed following competencies during the programme of the study:

- PSO-1.** Acquired knowledge and understanding of the microbiology concepts as applicable to diverse areas such as medical, industrial, environment, genetics, agriculture, food and others.
- PSO-2.** Demonstrate key practical skills/competencies in working with microbes for study and use in the laboratory as well as outside, including the use of good microbiological practices
- PSO-3.** Competent enough to use microbiology knowledge and skills to analyse problems involving microbes, articulate these with peers/ team members/ other stake holders, and undertake remedial measures/ studies etc.
- PSO-4.** Developed a broader perspective of the discipline of Microbiology to enable him to identify challenging societal problems and plan his professional career to develop innovative solutions for such problems.

SEMESTER I

PAPER 1 Code UMB 101: INTRODUCTION TO MICROBIAL WORLD

Course Outcomes

- CO-1.** Upon successful completion of the course, the students
- CO-2.** Will be acquainted with the historical account and development of microbiology as a scientific discipline.
- CO-3.** Will have gained knowledge on different systems of classification. They will also acquire an overview of acellular and cellular microorganisms.
- CO-4.** Will have acquired in-depth knowledge of the diversity, distribution, cell structure, life cycles and economic importance of algae.
- CO-5.** Will have gathered detailed information on the diversity, distribution, structure, life cycles and

economic importance of fungi.

PAPER 2 Code UMB 102: TECHNIQUES IN MICROBIOLOGY

Course outcomes

CO-1. Major learning outcome of this course is that students develop a very good understanding of several microbiological techniques and instruments which are commonly used in a microbiology laboratory. The students have learnt

CO-2. Principles which underlie sterilization of culture media, glassware and plastic ware to be used for microbiological work.

CO-3. Principles of a number of analytical instruments which the students have to use during the study and also later as microbiologists for performing various laboratory manipulations.

CO-4. Handling and use of microscopes for the study of microorganisms which are among the basic skills expected from a practicing microbiologist. They also get introduced a variety of modifications in the microscopes for specialized viewing.

CO-5. Several separation techniques which may be required to be handled later as microbiologists.

PAPER 3 Code UMB 103: CHEMISTRY

Course Outcomes:

CO-1. The students will learn about the principle, methodology, calculation and application involved in quantitative, chemical and spectrophotometric methods.

CO-2. The student shall learn the essential concepts of chirality, configuration, isomerism in organic chemistry and nomenclature of isomers. Students will familiarize with the elementary concept of saturated aliphatic hydrocarbons reactions.

CO-3. The students shall learn about the fundamentals of organic chemistry with references to structure and reactivity, reagents and reactions & reaction and mechanism.

CO-4. The students will learn about ionic, covalent bonding in molecules. compare/contrast the properties of molecular and ionic compounds.

CO-5. The students will learn the elementary concepts of ionic chemical equilibrium with respect to acid – base, salt hydrolysis and solubility of ionic substances.

PAPER 5 Code UMBE 101: COMMUNICATIVE ENGLISH

Course outcomes

Students will

CO-1. Improved LSRW- listening, speaking, reading and writing skills and the related sub-skills.

CO-2. Recognize and use formal elements of organizational communications: Paper writing, reports, proposals, memorandums, letters etc.

CO-3. Enhanced vocabulary with right pronunciation and improved accuracy in grammar. • Effective oral presentations.

SEMESTER II

PAPER 1 Code UMB 201: BACTERIOLOGY

Course Outcomes

After successful completion of the course, the student

CO-1. Will gain knowledge about morphology, structure and organisation of different cell components and be able to differentiate between cell walls of Gram positive and Gram-negative bacteria, cell walls and cell membranes of archaea and eubacteria.

CO-2. Will also be able to explain gram and acid-fast staining reactions and effect of antibiotics and enzymes on cell wall structure. Will get familiar with various techniques used for isolation, cultivation and preservation of different types of bacterial cultures.

CO-3. Will gain insight into working and importance of compound microscope.

CO-4. Will understand nutritional requirements of different types of bacteria and formulation of media for bacterial growth.

CO-5. Will be able to briefly explain methods of asexual reproduction in bacteria.

PAPER 2 Code UMB 202: MEDICAL MICROBIOLOGY

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will have understood the diverse nature of the normal microflora of the body and its significance as well. Student will have also acquainted themselves with the terminology and scientific nomenclature used in describing disease causation and pathogenic features of microbial agents of disease.

CO-2. Will have gained an in-depth knowledge about the spectrum of diseases caused by bacterial pathogens, and an understanding of the course of disease development and accompanying symptoms. Will become familiar with the methods of transmission, epidemiological aspects as well as prevention and control methods.

CO-3. Will become acquainted with the spectrum of diseases caused by viral pathogens. Also, will understand the course of disease development and symptoms seen in diseases of different organ systems.

CO-4. Will understand the causation of fungal and protozoal diseases and methods of prevention and control.

CO-5. Will learn about the current approaches to diagnosis of diseases.

PAPER 3 Code UMB 203: CHEMISTRY

Course Outcomes

CO-1. The students will learn about the energy and electromagnetic spectrum.

CO-2. The student shall learn the principle, theory and applications of UV Visible spectroscopy and Infrared spectroscopy.

CO-3. The students will get knowledge in the field of Electrochemistry special in references with Electrochemical cell, Nerst equation Gibbs energy.

CO-4. The students will learn general structure, configuration and properties of Carbohydrates, Amino acids, Proteins and Peptides.

PAPER 4 Code UMBE201: BASICS OF COMPUTERS

Course outcomes

CO-1. The students shall learn about the introduction, basics, organization, types and preliminary knowledge of operating systems and system tools.

CO-2. Students will get the idea about data representation, networks terminologies, multimedia and its applications.

CO-3. Students will get general awareness about the IT Act, system security and preliminary knowledge about the I-Tax, E banking and E reservations.

PAPER 5 Code UMBE 202: BIOANALYTICAL TECHNIQUES

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will have identified the principle components of a light microscope, fluorescence microscope, phase contrast microscope, confocal and electron microscope, simultaneously learning about their principles and practical applications in visualizing, identifying and measuring cell, its components and biomolecules. The student will be familiar with staining and preparation of samples for microscopy

CO-2. Will have gained an in-depth knowledge of principles and applications of paper chromatography, thin layer chromatography, gel filtration chromatography, ion- exchange chromatography, affinity chromatography, GC, HPLC. This enables the students to apply the acquired knowledge in isolation and separation of biomolecules for analysis.

CO-3. Will have learnt basic concepts of various techniques used to resolve and analyze nucleic acids and proteins - agarose gel electrophoresis, native polyacrylamide gel electrophoresis, SDSpolyacrylamide gel electrophoresis, isoelectric focusing, 2D gel electrophoresis, zymogram preparation.

CO-4. As well as be able to understand absorption spectra of biomolecules, and will be able to interpret UVvisible and fluorescence spectroscopy outputs.

CO-5. Will have clear fundamentals of centrifugation, RCF, sedimentation coefficient, different types of rotors used, principle and working of differential and density gradient centrifugation, preparative and analytical scales of centrifuge, and the specific uses of ultracentrifuge. Students will also be acquainted with limitations of each method.

SEMESTER III

PAPER 1 Code UMB 301 CELL BIOLOGY-I

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will have gained knowledge about features of the cell wall, plasma membrane, cell transport mechanisms and cytoskeleton.

CO-2. Will be able to understand the structures and functions of the nucleus and different cell organelles. The structural organization and function roles of chromatin will be learnt.

CO-3. Will have understood the mechanisms of protein sorting, intracellular trafficking, protein export.

CO-4. Will have gathered understanding of how cells perceive and respond to various signals from within and outside.

CO-5. Will have learnt the mechanisms of cell division and the significance of cell cycle and its regulation. Will become familiar with stem cell technology and its applications.

PAPER 2 Code UMB 302: PHYCOLOGY & MYCOLOGY

Course outcomes

By the completion of this course the students able to

CO-1. Describe useful and harmful activities of fungi and algae.

CO-2. Identify commonly available fungi and algae and their characteristics.

CO-3. Discuss how fungi and algae are used as biofertilizers in agriculture and as biopesticides.

CO-4. Grow mushroom in the laboratory.

PAPER 3 Code UMB 303: VIROLOGY

Course Outcomes

Upon successful completion of the course the student

CO-1. Will have acquired the knowledge in the following areas.

CO-2. Will be able to describe the nature, properties and structure of viruses and will also gain knowledge of taxonomy of different groups of viruses.

CO-3. Will be familiar with diversity and multiplication of lytic and lysogenic bacteriophages.

CO-4. Will be able to describe different ways of viral transmission, and prominent and unusual genomic features of different viruses with their significance.

CO-5. Will understand about the replication strategies, maturation and release of important plant, animal and bacterial viruses.

PAPER 4 Code UMBE 301: MOLECULAR BIOLOGY-I

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will be acquainted with the structure of various types of DNA and RNA as well as their organization as genetic material in various living organisms.

CO-2. Will gain an in-depth knowledge of DNA replication mechanisms in prokaryotes and eukaryotes, enzymes and proteins involved in replication.

CO-3. Will have learnt the fundamental principles of transcription in prokaryotes and eukaryotes, including the RNA polymerases and general transcription factors involved. Will be able to distinguish between the process in prokaryotes versus eukaryotes.

CO-4. Will understand the concept of split genes, introns, exons, spliceosomes and alternative splicing besides learning about other processing events like polyadenylation and capping. Will become familiar with RNA interference and its significance, siRNA and miRNA.

CO-5. Will get a clear understanding of translational mechanisms in both prokaryotes and eukaryotes along with the inhibitors of protein synthesis.

PAPER 5 Code UMBE 302: RECOMBINANT DNA TECHNOLOGY

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will get an overview of developments and contributions of scientists in the field of genetic engineering.

CO-2. Will get familiarized with basic cloning tools such as enzymes used to manipulate DNA, and cloning vectors.

CO-3. Will have learnt various gene delivery methods and basic essential techniques of DNA, RNA and protein analysis.

CO-4. Will gather in-depth knowledge of DNA amplification and sequencing methods.

CO-5. Will become conversant with construction and screening of genomic and cDNA libraries.

SEMESTER IV

PAPER 1 Code UMB 401: MICROBIAL PHYSIOLOGY AND METABOLISM

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will have got acquainted with the diverse physiological groups of bacteria/archaea and microbial transportsystems.

CO-2. Will have an in-depth knowledge of patterns of bacterial growth, bacterial growth curve, calculation of generation time and specific growth rate, and effect of the environment on growth.

CO-3. Will understand the variety of pathways used by bacteria for energy generation and conservation during growth on glucose under aerobic and anaerobic conditions.

CO-4. Will become conversant with two important fermentation pathways in microbes.

CO-5. Will have an added knowledge on the groups and families of chemolithotrophs and phototrophs, based on their ability to extract energy from inorganic compounds and assimilate carbon from CO₂.

PAPER 2 Code UMB-402: GENETICS AND GENOMICS-I

Course Outcomes

Upon successful completion of the course, the student will have

CO-1. Knowledge of Genetic material and genetic recombination.

CO-2. Understanding the stages of gene expression: phenomena of cell division.

CO-3. Improved understanding of mutation and mutagens.

CO-4. Applying the Mendelian principles and its extensions to solve genetic problems

PAPER 3 Code UMB 403: CELL BIOLOGY-I

Course Outcomes

Understanding of processes that control eukaryotic cell cycle, cell division and cell death.

CO-1. Conceptualized the mechanisms of signal transduction and cell-cell interaction.

CO-2. Knowledge of stem cell and their therapeutic uses and limitations.

CO-3. Linking the rapid advances in cell biology for a better understanding of diseases like Cancer and its cytology

PAPER 4 Code UMBE 401: MOLECULAR BIOLOGY-II

Course outcomes

CO-1. Study of RNA polymerase and mechanisms in prokaryotic and eukaryotic cell.

CO-2. Study of RNA modification, split genes, RNA splicing, m-RNA transport

CO-3. Translation process in prokaryotic and eukaryotic cell.

CO-4. Transcription regulation in prokaryotes and eukaryotes and regulatory RNAs.

PAPER 5 Code UMBE 402: IMMUNOLOGY

Course Outcomes

CO-1. Upon successful completion of the course, the student

CO-2. Will be acquainted with the emergence of immunology and how the immune system protects us from infection through various lines of defence.

CO-3. Will have gained an in-depth knowledge of characteristics and functions of the cells of the immune system and the organization of organs of the immune system.

CO-4. Can understand the characteristics that make the molecules to act as antigens. The students will also be conversant with the types, properties and functions of antibodies made against the antigens. Will be able to outline the production and use of monoclonal antibodies.

CO-5. Will understand the cell surface proteins essential for generation of acquired immune response to differentiate self and non-self-molecules and the pathways for antigen processing and presentation.

SEMESTER-V

PAPER 1 Code UMB 501: FOOD AND DAIRY MICROBIOLOGY

Course Outcomes

On successful completion of the course, the student

CO-1. Will be aware of the possible sources of contamination of foods and the parameters affecting microbial growth in foods.

CO-2. Will gain insight into the microbial spoilage of some foods.

CO-3. Will acquire an in-depth knowledge of various physical and chemical methods used for food preservation. Will be acquainted with microbial production of fermented dairy and non-dairy food products. Will also be able to understand the health benefits of prebiotics, probiotics and symbiotic.

CO-4. Will be conversant with some food-borne diseases and will be able to explain methods for detection of food borne pathogens • Will be able to understand the concept of quality control of food.

PAPER 2 Code UMB 502: MICROBIAL ECOLOGY

Course Outcomes

After studying this course, the student

CO-1. Will know about the diverse microbial populations present in various natural habitats (different types).

CO-2. Would understand the interaction of microbes with both micro and macro-organisms (plants and animals).

CO-3. Would become aware of the importance of microbes in any ecosystem with reference to nutrient cycling/biogas-chemical cycling.

CO-4. Would become familiar with and gain knowledge about the various methods of waste treatment (solid and liquid) and management.

CO-5. Would become aware of the degradable properties of a microbial population present in a habitat/ecosystem.

PAPER 3 Code UMB 503: INDUSTRIAL MICROBIOLOGY

Course Outcomes

Upon successful completion of the course the student

CO-1. Will understand the development and importance of industrial microbiology and will be conversant with different types of fermentation processes in liquid media as well as solid state substrates media.

CO-2. Will learn about the design, operation and uses of different types of fermenters of laboratory, pilot and industrial scale.

CO-3. Will gain insight into the techniques of isolation, screening, preservation and maintenance of industrially important microbial strains and different types of media used in fermentation processes.

CO-4. Will be acquainted with principles of techniques used for the extraction and purification of industrial products produced using microbial fermentation processes.

CO-5. Will have gained in-depth knowledge of the principles of microbial production and recovery of industrial products at large scale.

PAPER 4 Code UMB 501: GENETICS AND GENOMICS II

Course Outcomes

Student will

CO-1. Conceptualize the mechanism of developmental biology and embryonic development of different model organism.

CO-2. Analyze and interpret biological and evolutionary problems in terms of genetics and genomics concepts.

CO-3. Knowledge of key processes involved in inheritance and expression of gene.

PAPER 5 Code UMBE 502: PLANT PATHOLOGY

Course Outcomes

Upon successful completion of the course, the student

CO-1. Student will know about concept of disease, causal agents of plant diseases, identification methods and management of crop diseases.

CO-2. Student will know importance of sign and symptoms for detection of pathogens and disease, integrated methods of disease management, use of biological and chemicals in disease management.

CO-3. Students will know various laboratory methods of detection of plant pathogens and evaluation of biological and chemical agents against plant pathogens.

CO-4. Student will know plant viruses, important viral diseases of crops, sign and symptoms and management of viral diseases.

CO-5. Students will know biological method of plant growth, disease control and conventional and industrial production of bio control agents.

M.SC. BIOSCIENCE

PROGRAMMER OUTCOME

The aim of the undergraduate degree in Microbiology is to make students knowledgeable about the various basic concepts in a wide-ranging context which involve the use of knowledge and skills of Microbiology. Their understanding, knowledge and skills in Microbiology needs to be developed through a thorough teaching learning processes in the class, practical skills through the laboratory work, their presentation and articulation skills, exposure to industry and interaction with industry experts, write short research-based projects where they are guided and mentored by the academic and other experts of the subject.

PO-1. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO-2. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).

PO-3. Social Interaction: Provide a social exchange between two or more individuals.

PO-4. Effective Citizenship: Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-5. Ethics: Recognize different value and moral systems and correlate them with present system.

PO-6. Environment & Sustainability: To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.

PO-7. Self-Directed & Life-long learning: It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMMER SPECIFIC OUTCOMES

A candidate who is conferred an UG (Hons) degree i.e., B.Sc. (Hons) degree in microbiology needs to have

acquired/developed following competencies during the programme of the study:

- PSO-1.** Acquired knowledge and understanding of the microbiology concepts as applicable to diverse areas such as medical, industrial, environment, genetics, agriculture, food and others.
- PSO-2.** Demonstrate key practical skills/competencies in working with microbes for study and use in the laboratory as well as outside, including the use of good microbiological practices
- PSO-3.** Competent enough to use microbiology knowledge and skills to analyse problems involving microbes, articulate these with peers/ team members/ other stake holders, and undertake remedial measures/ studies etc.
- PSO-4.** Developed a broader perspective of the discipline of Microbiology to enable him to identify challenging societal problems and plan his professional career to develop innovative solutions for such problems.

SEMESTER I

PAPER 1 CODE BSC101: BIOLOGICAL DIVERSITY OF VIRUSES, BACTERIA AND FUNGI

Course Outcomes

- CO-1.** Conceptualize the history and scope of microorganisms with emphasis on origin and general features of prokaryotes and eukaryotes. Learners will be able to understand the status and economic importance of microorganisms in agriculture, industry and medicine.
- CO-2.** Knowledge of basic techniques of staining, isolation, enumeration, maintenance and preservation of microbial culture; with understanding of composition of different culture media and nutritional requirement of microorganisms.
- CO-3.** Empowers the student to acquire knowledge about the habitat, structure, reproduction, biochemical characterization and Classification of Bacteria, Cyanobacteria and Actinomycetes.
- CO-4.** Understanding of the structure, multiplication and classification of viruses, Scrapie Viroids, Prions and Viroids; general account of Rickettsia, Chlamydia and Mycoplasma.
- CO-5.** Knowledge of habitat, structure, reproduction and classification of fungi.

PAPER 2 CODE BSC102: DEVELOPMENTAL BIOLOGY (ANIMAL)

Course Outcomes

- CO-1.** Enabling students to understand the process of development of male and female gonads including ultrastructural details of the reproductive tissues and cells.
- CO-2.** The students also learn the process of fertilization including initial changes in an ovum in terms of various planes of cleavages and their significance in eventual development of individuals, taking some examples of Annelids and Mollusks.
- CO-3.** The students are also made acquainted with initial process of embryogenesis; gastrulation and organogenesis taking some animal models.
- CO-4.** The fetus development is the next component with which students are versed with. The placental development and various types of mammalian placenta is also included.
- CO-5.** The students learn various aspects of metamorphosis and organogenesis with respect to life cycle transformations in insects and amphibians.

PAPER 3 CODE BSC103: BASIC ECOLOGY

Course Outcomes

The student will be able to get the huge knowledge of population ecology.

- CO-1.** Students will be able to study the concept, organization and study of the community with the concept of niche and biodiversity.
- CO-2.** Students will be able to understand the vegetative organization in community. Students will get to

know about how changes take place during ecological succession.

CO-3. Student will have developed knowledge about structure and function of ecosystem. They also will understand about biogeochemical cycle in environment and its role.

CO-4. Demonstrate proficiency in the experimental techniques and methods to study the ecosystem.

PAPER 4 CODE BSE101: BIOMOLECULES

Course Outcomes

CO-1. Enabling students to understand the importance of water in maintaining the various biochemical reactions such as buffering, phosphorylation, oxidation-reduction etc.

CO-2. The students learn the principle of working of enzyme and the process of enzymology, that is, how the enzymes work and where the active sites play a key role.

CO-3. The students also learn the basic and functional structures of all the biomolecules in detail.

CO-4. The inter-relationships and communication between the biomolecules is a major part of signal transduction. The students become well versed with this mode of biological process.

CO-5. The students learn various techniques such as chromatography, spectroscopy and electrophoresis to understand the purity of biomolecules and their analytical properties for further application.

PAPER 5 CODE BSE102: BIOENERGETICS AND INTERMEDIARY METABOLISM

Course outcomes

CO-1. Learners will understand the concepts of bioenergetics, mitochondrial respiratory chain, cytochrome characterization and Oxidative phosphorylation.

CO-2. Students will get huge knowledge of cell transport systems, influx and efflux mechanisms, symport, antiport, uniport.

CO-3. Students will learn about the carbohydrate metabolism; glycolysis, TCA cycle, energy generation, energy rich bonds, biosynthesis of sugars, HMP shunt and alternate pathways.

CO-4. Students will learn about lipid metabolisms; fatty acid synthesis and oxidation, triglycerol, steroids and terpenes.

CO-5. Students will understand about the amino acid and nucleic acid biosynthesis, degradation, regulation, urea cycle, inhibitors and inborn error metabolism.

SEMESTER-II

PAPER 1 CODE BSC201: TAXONOMY OF ANGIOSPERMS

Course Outcomes

CO-1. Understanding principles of biodiversity and its conservation. Gaining insight into the rules of nomenclature, adaptive features of ICBN and different classification systems.

CO-2. Learning and applying different techniques of identification, documentation of plants and role of computer in database identification. They will know how to prepare herbarium and use of keys to identify floras.

CO-3. Knowledge of modern taxonomy and its application in taxonomic evidences from anatomy, embryology, palynology, cytology, secondary metabolites. Understanding numerical taxonomy and OUT's coding.

CO-4. Empowers student to recognize, collect and compare the plants of the given fourteen angiosperm families. Learners will be able to describe the plant specimen with taxonomical terms, floral formula and diagrams.

CO-5. Acknowledge the economic uses of plants in modern society. An increased awareness and appreciation of plants & plant products encountered used by tribes of MP. Knowledge of important families of useful plants, the parts used and active biomolecules present in medicinal plants.

PAPER 2 CODE BSC202: BIOSTATISTICS AND COMPUTER APPLICATIONS

Course Outcomes

CO-1. Proficiency of students in various techniques of collection, collation, summarization and presentation of data. They could learn basic concepts of probability and probability distribution functions along with applications.

CO-2. Understanding and applications of descriptive and inferential statistics enabling students to use tests of significance in biological data.

CO-3. Can apply Analysis of Variance tools and different experimental designs to biological experiments, enabling them to minimize experimental and sampling errors.

CO-4. Understands concepts of correlation and regression tools and techniques, attempts extrapolation and simulation of biological processes.

CO-5. Empowers students to utilize software packages in digital analysis and processing of biological data. Integrate informatics with biology through data submission protocols, sequence alignment and searches, annotations and possible applications in human health and welfare.

PAPER 3 CODE BSE201: BIOLOGY OF THE IMMUNE SYSTEM

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will be able to understand the fundamental bases of immune system and immune response.

CO-2. Will be able to gather information about the structure and organization of various components of the immune system.

CO-3. Will be able to understand the genetic organization of the genes meant for expression of immune cell receptors and the bases of the generation of their diversity.

CO-4. Will be able to understand the operation and the mechanisms which underlie the immune response.

CO-5. Will be able to apply the knowledge gained to understand the phenomena like host defense, hypersensitivity (allergy), organ transplantation and certain immunological diseases.

PAPER 4 CODE BSE202:RESOURCE UTILIZATION AND CONSERVATION

Course Outcomes

CO-1. Deep understanding of distribution, structure and function of various aquatic and terrestrial biomes.

CO-2. Learn definitions, types and utilities of biodiversity along with threats along their applications in management and sustainable development of resources from various biomes. **CO3:** Empowers students to apply in-situ and in-vitro techniques in conservation of aquatic and terrestrial resources in real time.

CO-3. Understands concepts of pollution of different environments and can monitor and treat pollution loads in artificial and natural ecosystems; and appreciate nuances of industrial, societal and urban pollutions.

CO-5. Gains insight knowledge about remote sensing of earth resources along with platforms, sensors and scanners, visual and digital interpretation of remotely sensed. **PAPER 5 CODE BSE203:MICROBIAL METABOLISM**

Course Outcomes

CO-1.The student will be able to get the huge knowledge about microbial growth, measurement, growth curve, types of growth and effect of environmental factors.

CO-2. Students will understand the process of Chemolithotrophy, Methanogenesis, photosynthetic and accessory pigments, oxygenic and anoxygenic photosynthesis, electron transport, generation of ATP and fixation of carbon dioxide.

CO-3. Learners will gain the idea about respiratory metabolism EMP, ED, glyoxalate pathway, TCA

cycle, phosphorylation, Pasteur Effect and fermentation.

CO-4. Student will know about assimilation of nitrogen, synthesis of major amino-acids, polyamines; peptidoglycan-biopolymers as cell components.

CO-5. Students will understand the microbial development, sporulation and morphogenesis and organization of microbes.

SEMESTER III

PAPER 1 CODE BSC301: PLANT PHYSIOLOGY

Course Outcomes

CO-1. The student will be able to get the huge knowledge about pathways of water through xylem and phloem. Know about the requirement of mineral nutrition for plant growth.

CO-2. Students will understand the process of Photosynthesis, Respiration and Nitrogen metabolism.

CO-3. Learners will gain the idea about Stress physiology – Responses of plants to biotic and abiotic stresses, biological clock and the photoperiodism.

CO-4. Student will know about the Plant Growth hormones (Auxins, Gibberellins, Cytokinins, Ethylene), they understand the biosynthesis of phenolic acids, alkaloids.

CO-5. Demonstrate proficiency in the experimental techniques and methods to study the plant physiology.

PAPER 2 CODE BSC302: GENETICS & MOLECULAR BIOLOGY

Course Outcomes

CO-1. Understanding of DNA as the genetic material and its types. Knowledge of chromatin organization, euchromatin, heterochromatin, C value paradox and restriction mapping.

CO-2. Knowledge of Mutation, its kind and mechanism of DNA repair system.

CO-3. Conceptualize different aspects of genetics of microorganism with deep understanding of molecular mechanism of recombination, role of Rec ABC&D, linkage and crossing over.

CO-4. Empowers student to acquire knowledge about different enzymes of DNA replication, transcription and translation. Deep understanding of DNA and RNA sequencing methods, process of transcription and post transcriptional processing.

CO-5. Gains insight into the process of translation and gene expression in prokaryotes and eukaryotes by understanding different types of RNA, translational factors, concept of operon; lac and tryptophan and different models of gene expression in eukaryotes.

PAPER 3 CODE BSC303: ANIMAL PHYSIOLOGY

Course Outcomes

CO-1. The students learn the nutritional pattern in animals in relation to hormonal and enzymatic regulation of digestion with reference to homeostasis.

CO-2. Blood and lymph – their structure and function related to gas exchange, ion transport and clotting and defense is dealt in good detail.

CO-3. The students are also made acquainted with the very importance of muscles in relation to structure, function and physiology. Further, the neuromuscular interconnection and basic role of neuronal tissue at different level is elaborately dealt with here.

CO-4. The complete physiology of invertebrate and vertebrate excretion system is learnt by the pupil.

PAPER 4 CODE BSE301: ADVANCED MOLECULAR BIOLOGY

Course Outcomes

CO-1.To understand key principles of how cells work, including gene regulation, protein synthesis and signaltransduction.

CO-2.To locate, analyse, evaluate and synthesise information from a wide variety of sources to understand thekey principles of Molecular Biology.

CO-3.To read, interpret and discuss major contributions to Molecular Biology research published in scientific research literature.

CO-4.To develop effective, creative and innovative solutions, both independently and cooperatively, to currentand future research problems in Molecular Biology.

PAPER 5 CODE BSE302: AGRICULTURAL MICROBIOLOGY

Course Outcomes

CO-1. Describe role of microorganism in recycling soil nutrients, biodegradation of complex plant polymers, sustaining and improving plant growth through improving nutrient availability, production of plant growth promoting substances and inhibiting pathogens.

CO-2. Critically discuss the need for agricultural microbiology and explain their limitations.

CO-3. Clarify application of microorganisms in varied fields of agricultural microbiology like bioremediation, biofertilizers and waste water treatment.

CO-4. Analyse various aspects of N₂ fixation, Phosphate solubilization, PGPR etc. Pre and post harvesting agricultural losses, management, formulation, mass production and applications.

CO-5. Green revolution, transgenic plant, gene protection technology, resistant varieties, management of agricultural waste as food, feed and fuel.

PAPER 6 CODE BSE303: BIOPROCESS ENGINEERING AND TECHNOLOGY

Course Outcomes

Upon successful completion of the course, the student:

CO-1. Will have gained insight on industrially important microbes, recent developments in fermentation processes and various optimization strategies at fermenter level.

CO-2. Understands the concept of sterilization methods and principles of batch and continuous processes.

CO-3. Attains knowledge about designing of industrial strains and various media optimization strategies .

CO-4. Learns about the design, types of fermenters and various critical components of bioreactors

CO-5. Is able to describe control parameters, fluid rheology and process constraints in a large scale bioreactor

PAPER 7 CODE BSE304: BIOTECHNOLOGY

Course Outcomes

Upon successful completion of the course, the student:

CO-1. Will learn about various industrially relevant microbial products and their production process, role of biotechnology in environment management.

CO-2. Acquires knowledge about strains development, selection of hyper producers, microbial products, metabolic engineering and various industrial relevant microbial products and their production process Learns about the designing of recombinant heterologous expression systems such as E. coli, yeast, mammalian and insect cells.

CO-3. Learns about sterilization at reactor scale and different types of sterilization strategies

CO-4. Attains knowledge about designing large scale industrial processes and types of cultivation strategies Understands the concept of recombinant biomolecules, therapeutic proteins, vaccines, antibodies, bio-pesticides, bio-fertilizers, and probiotics .

CO-5. Understands different types of regulatory approvals required for drug development and difference between biologics, biosimilars and biobetters.

SEMESTER IV (CREDITS 18)

Course Outcomes

- CO-1.** Student is able to conceive a problem based on current published research.
- CO-2.** Student is able to carry out comprehensive survey of literature on the topic of research
- CO-3.** Student is able to make culture media for various microbes
- CO-4.** Student is able to isolate microorganism from different environmental/ food sources
- CO-5.** Student is able to identify the isolated microorganism using biochemical and molecular methods
Student is able to assess the microorganism's ability to produce various enzymes

M.SC. BIOTECHNOLOGY

PROGRAMME OUTCOMES:

The objective of the Master's Program in Biotechnology is to equip the students to gain conceptual and analytical skills about biological materials, biotechnological tools and techniques. The program emphasizes to apply knowledge acquired about prokaryotic and eukaryotic cellular processes, structural and genetic manipulation of cellular material and processes, and data processing and interpretation techniques. The imparting of laboratory training for bioassay protocols of biological materials, their manipulative treatments, emerging tissue culture and genetic recombinant techniques, and bioinformatics databases and tools. Students will be able to address application skills of biotechnological techniques and tools in fields of biomolecules including enzymes, environment, animals, microbes and plants.

- PO-1. Critical Thinking:** Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication:** Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction:** Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship:** Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics:** Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability:** To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning:** It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMMER SPECIFIC OUTCOMES

The Masters in Biotechnology Program will cater to the expanding demand for skilled manpower, which is equipped with an understanding of modern research protocols and ethics involving both cellular and molecular materials from biological entities in alleviation and remediation of energy demands, environmental conservation and management, plant health and yield management, human health including emerging epidemic and pandemic disease loads, and synthesis of multi-functional enzymes, organisms and their survival in nature to maintain natural biodiversity and ecological balance.

A M.Sc. Biotechnology student should be able to independent study and researches related to

- PSO-1.** Isolation of novel biological material, its assay and multiplication, and manipulation.
- PSO-2.** Application of modern emerging methodological and analytical tools and techniques in qualitative and quantitative assessment of biological materials and processes.
- PSO-3.** Extraction of biological molecules and sub-molecules and their biochemical, genetic and molecular characteristics and dynamics. Designing of bioassay experiments, assessment of their outcomes, their modeling and simulation.
- PSO-4.** Efficient retrieval of information from national and international biological databases, analysis of retrieved information and contribution to new knowledge.
- PSO-5.** Integration of up- and down-stream processing of bioassay experiments and their analytical and application assessment.

SEMESTER I

PAPER 1 CORE CODE BTC101: CELL BIOLOGY

Course Outcomes

- CO-1.** Understanding of structure of prokaryotic and eukaryotic cell, and application of knowledge of microscopic techniques for cell study.
- CO-2.** Knowledge of functional integrity and structure of different cell organelles and transport of ions, nutrients and macromolecules across membranes.
- CO-3.** Knowledge about signal transduction pathway with understanding of different type of receptors and signaling molecules.
- CO-4.** Conceptualization of cell cycle, cell division and cell death. Deep understanding of events of mitosis, apoptosis, embryonic stem cells and therapeutic cloning.
- CO-5.** Knowledge about biology of cancer and its causes. Understanding of oncogenes, tumor suppressor gene, tumor viruses and molecular approach of cancer treatment.

PAPER 2 CORE CODE BTC102: ANIMAL CELL SCIENCE AND TECHNIQUES

Course Outcomes

- CO-1.** Understanding the basic structure and organization of animal cell; equipment's and materials for animal cell culture technology; primary and established cell lines cultures; introduction and function of the balanced salt solutions and simple growth medium, serum and supplements; role of carbon dioxide in to the culture.
- CO-2.** Learning the different parameters, i.e. viability and cytotoxicity; biology and characterization of the cultured cells and basic techniques of cultured cells like disaggregation of tissue and primary culture; maintenance of cell culture.
- CO-3.** Knowledge about various techniques like Scaling up of animal cell culture, cell synchronization, cell cloning and micro-manipulation, cell transformation.
- CO-4.** Understanding the application of animal cell cultures, stem cell cultures, cell culture based vaccines, somatic cell genetics.
- CO-5.** Conceptualize the application of Organ and histotypic culture, measurement of cell death, apoptosis, three-dimensional culture and tissue engineering

PAPER 3 CODE BTC103: MICROBIAL PHYSIOLOGY AND GENETICS

Course Outcomes

- CO-1.** Gains insight about growth dynamics, mathematical expression, growth curves and yields, types of growth; effect of environmental factors storage and maintenance of cultures.
- CO-2.** Understanding of concepts of metabolic diversity, including photosynthetic, chemolithotrophic and

nitrogen fixation, nitrate and sulfate reduction, fermentation, decomposition, methanogenesis and acetogenesis, hydrocarbon transformation. Gains insight knowledge about structural and metabolic diversity of bacteria, viruses, viroids and prions. Prokaryotic cells structure.

CO-3. Insight into host-parasite relationship, colonization, types of toxins, and their structures, mode of action, Chemotherapy/antibiotics: antimicrobial agent antibiotics, mode of action, antibiotics resistance.

CO-4. Sound knowledge of genes, mutation and mutagenesis; types of mutagens and mutation; Ames test, complementation test, Bacterial genetic recombination, plasmids and transposons; bacterial genetics mapping.

PAPER 4 ELECTIVE CODE BTE101: BIOMOLECULES

Course Outcomes

CO-1. Enabling students to understand the importance of water in maintaining the various biochemical reactions such as buffering, phosphorylation, oxidation-reduction, etc.

CO-2. The students learn the principle of working of enzyme and the process of enzymology, i.e. how the enzymes work and where the active sites play a key role.

CO-3. The students also learn the basic and functional structures of all the biomolecules in detail.

CO-4. The inter-relationships and communication between the biomolecules is a major part of signal transduction. The students become well versed with this mode of biological process.

CO-5. The students learn various techniques such as chromatography, spectroscopy and electrophoresis to understand the purity of biomolecules and their analytical properties for further application

PAPER 5 ELECTIVE COURSE CODE BTE102: BIOENERGETICS AND INTERMEDIARY METABOLISM

Course Outcomes

CO-1. Enabling students to understand finely detailed energy dynamics of a biomembrane, the components involved therein and various physiological attributes driven by aforementioned energy transformation.

CO-2. The students learn the principle of working of mitochondria as a model of energy transducer with special reference to its membrane associated respiratory processes leading to formation of ATP.

CO-3. The students also learn the anabolic and catabolic processes involving carbohydrates in maintaining the energy balance of the cell.

CO-4. The biosynthesis of lipids that constitute the biomembranes is understood at the level of enzymes and pathways.

CO-5. The catabolic role of amino acids in the formation of urea and abnormalities due to metabolic errors in these cycles is learnt by students. The synthesis of nucleic acids, the hereditary material, involving purines and pyrimidines is made acquainted to the learners.

SEMESTER II

PAPER 1 CODE BTC201: MOLECULAR BIOLOGY

Course Outcomes

CO-1. The students learn about different models and biochemical processes associated with nucleic acid replication in diverse model organisms.

CO-2. The learners get a deep acquaintance with the process of DNA recombination and repair in model organisms.

CO-3. The pupils become well versed with the process of DNA-dependent RNA synthesis (transcription) and post-transcriptional modifications thereby generating transfer, messenger and ribosomal RNA. Channelling of specialized proteins to their correct positions is also made aware of.

CO-4.Students learn function of cancer-associated and cancer-preventing genes as well as techniques and applications related to ribozymes and antisense RNA.

CO-5.Sophisticated techniques related to genome mapping, DNA fingerprinting, genome cloning and recognition of desired genes are elaborated along their applications.

PAPER 2 CODE BTC202: MACROMOLECULES & BASIC ENZYMOLOGY

Course Outcomes

CO-1.The students learn the unitary model of functioning of the enzymes and the environmental factors affecting the efficiency of working of the enzyme

CO-2.The kinetics of the enzyme leading to catalysis in polar and non-polar environments, and the contribution of metal ions, water, pH, cofactor and coenzyme in overall efficiency of the enzyme is made understood in detail.

CO-3.The students become well versed with the selected model enzymes with their regulatory pattern in overall control of anabolic and catabolic pathways. M.SC. BIOTECHNOLOGY 2020-2021 ONWARDS Approved by Board of Studies in Biotechnology on 15/09/2020, Faculty of Life Science on 14/10/20220 Standing committee on Executive Council on Page 22 of 46

CO-4.The learners get acquainted with the physiological role of the appropriate conformation of macromolecule and assemblies playing a contributing to the efficiency of catalytic proteins.

CO-5.Various biochemical techniques related in elucidating the overall structure of the different biomolecules and their specific role in specific conformations is learnt by the students.

PAPER 3 CODE BTC203 BIOSTATISTICS AND COMPUTER APPLICATIONS

Course Outcomes

CO-1.Proficiency of students in various techniques of collection, collation, summarization and presentation of data. They could learn basic concepts of probability and probability distribution functions along with applications.

CO-2.Understanding and applications of descriptive and inferential statistics enabling students to use tests of significance in biological data.

CO-3.Can apply Analysis of Variance tools and different experimental designs to biological experiments, enabling them to minimize experimental and sampling errors.

CO-4.Understands concepts of correlation and regression tools and techniques, attempts extrapolation and simulation of biological processes.

CO-5.Empowers students to utilize software packages in digital analysis and processing of biological data. Integrate informatics with biology through data submission protocols, sequence alignment and searches, annotations and possible applications in human health and we

PAPER 4 ELECTIVE CODE BTE201: BIOLOGY OF THE IMMUNE SYSTEM

Course Outcomes

CO-1.Students will be able to understand the fundamental bases of immune system and immune response.

CO-2.Information about the structure and organization of various components of the immune system.

CO-3.Students learn the genetic organization of the genes meant for expression of immune cell receptors and the bases of the generation of their diversity.

CO-4.Will be able to understand the operation and the mechanisms which underlie the immune response. M.SC. BIOTECHNOLOGY 2020-2021 ONWARDS Approved by Board of Studies in Biotechnology on 15/09/2020, Faculty of Life Science on 14/10/20220 Standing committee on Executive Council on Page 26 of 46

CO-5.Application of the knowledge gained to understand the phenomena like host defense, hypersensitivity (allergy), organ transplantation and certain immunological diseases COURSE CONTENTS UNIT-I

SEMESTER III

PAPER 1 CODE BTC301: ENVIRONMENTAL BIOTECHNOLOGY

Course Outcomes

CO-1.Deep understanding of existing and emerging technologies that are important in the area of environment and the principles and techniques which underline the environmental issues including air and water pollution.

CO-2.Empowers the students with the knowledge of Domestic waste water treatment, Classification of wastewater treatment (physical, chemical and biological)

CO-3.Students learn about concepts of Biodegradation, Biodegradation of hydrocarbon, Measurement of biodegradation. Bioremediation-Concept, Methods of Bioremediation (In-situ and Ex-situ Bioremediation), and Xenobiotic biodegradation.

CO-4.Learners will understand the concept of biodiversity: conservation and management, rules and acts. **CO5:** Deep understanding of global environmental problems-ozone depletion, UV-B greenhouse effect and acid rain, their impact and biotechnology approaches for management.

PAPER 2 CODE BTC302: GENETIC ENGINEERING

Course Outcomes

CO-1.Students will understand the core concepts and fundamentals of genetic engineering.

CO-2.Develop their competency on different types of strain improvements.

CO-3.Analyses of the enzymes and vectors for genetic modification for required productivity.

CO-4.Examination of gene cloning and evaluate different methods of gene transfer like metagenomics M.SC. BIOTECHNOLOGY 2020-2021 ONWARDS Approved by Board of Studies in Biotechnology on 15/09/2020, Faculty of Life Science on 14/10/20220 Standing committee on Executive Council on Page 33 of 46

CO-5.They are able to critically analyze the major concerns and applications of transgenic technology.

PAPER 3 CODE BTC303: PLANT BIOTECHNOLOGY

Course Outcomes:

CO-1.Understanding of different techniques of in vitro culture and media preparation. Concept of totipotency, morphogenesis, organogenesis and somatic embryogenesis.

CO-2.Knowledge of protoplast isolation, culture, fusion, somatic hybridization and cybridization.

CO-3.Concepts of transgenic plant production through Ri and Ti plasmids and direct methods.

CO-4.Concept of chloroplast transformation and its advantages, post harvest technology, and cryopreservation.

CO-5.Role of biotechnology in qualitative improvement in plants through herbicide resistance, insect resistance, disease resistance and N₂ fixation. Knowledge of molecular markers: RFLP, PCR, QTL and MAS.

PAPER 4 CODE BTE301: ADVANCED MOLECULAR BIOLOGY

Course Outcomes

CO-1.To understand key principles of how cells work, including gene regulation, protein synthesis and signaltransduction.

CO-2.To locate, analyse, evaluate and synthesise information from a wide variety of sources to understand thekey principles of Molecular Biology. M.SC. BIOTECHNOLOGY 2020-2021 ONWARDS Approved by Board of Studies in Biotechnology on 15/09/2020, Faculty of Life Science on 14/10/20220 Standing committee on Executive Council on Page 37 of 46

CO-3.To read, interpret and discuss major contributions to Molecular Biology research published in scientific research literature.

CO-4.To develop effective, creative and innovative solutions, both independently and cooperatively, to current and future research problems in Molecular Biology

PAPER 5 CODE BTE302: AGRICULTURAL MICROBIOLOGY

Course Outcomes

CO-1.Describe role of microorganism in recycling soil nutrients, biodegradation of complex plant polymers, sustaining and improving plant growth through improving nutrient availability, production of plant growth promoting substances and inhibiting pathogens.

CO-2.Critically discuss the need for agricultural microbiology and explain their limitations.

CO-3.Applications of microorganisms in varied fields of agricultural microbiology like bioremediation, biofertilizers and waste water treatment.

CO-4.Analyses of various aspects of N₂ fixation, Phosphate solubilization, PGPR etc. Pre and post harvesting agricultural losses, management, formulation, mass production and applications.

CO-5.Green revolution, transgenic plant, gene protection technology, resistant varieties, management of agricultural waste as food, feed and fuel.

PAPER 6 CODE BTE303: BIOPROCESS ENGINEERING AND TECHNOLOGY

Course Outcomes

Upon successful completion of the course, the student:

CO-1. Insights on industrially important organisms, recent developments in fermentation processes and various optimization strategies at fermenter level. Learns about the design, types of fermenters and various critical components of bioreactors.

CO-2. Is able to describe control parameters, fluid rheology and process constraints in large scale bioreactors. Strategies of product recovery from a fermentation broth.

CO-3. Understand the significance and activities of microorganisms in food. Recognize the characteristics of food-borne, waterborne and spoilage microorganisms, and methods for their isolation, detection and identification.

CO-4. Analyze the importance of microbiological quality control programme's in food production.

CO-5. Discuss the microbiology of different types of food commodities. Describe the rationale for the use of standard methods and procedures for the microbiological analysis of food

PAPER 7 BTE304: BIOTECHNOLOGY

Course Outcomes

Upon successful completion of the course, the student:

CO-1. Will learn about industrially relevant microbial products and their production process, role of biotechnology in environment management.

CO-2. Acquires knowledge about strains development, selection of hyper producers, microbial products, metabolic engineering and various industrial relevant microbial products and their production process. Learns about the designing of recombinant heterologous expression systems such as E. coli, yeast, mammalian and insect cells.

CO-3. Learns about sterilization at reactor scale and different types of sterilization strategies.

CO-4. Attains knowledge about designing large scale industrial processes and types of cultivation strategies
Understands the concept of recombinant biomolecules, therapeutic proteins, vaccines, antibodies, bio-pesticides, bio-fertilizers, and probiotics .

CO-5. Understands different types of regulatory approvals required for drug development and difference between biologics, biosimilars and biobetters



Department of PG Studies and Research in Chemistry and Pharmacy

Programme Offered

1. B. Pharma.
2. M.Sc. Chemistry

B. Pharmacy

PROGRAMME OUTCOMES:

- Gain knowledge on basics of biology, structure & function of various systems of human body, fundamentals & principles of analytical chemistry, basics & preparation of different dosage forms, monographs of inorganic drugs & pharmaceuticals, soft-skills management, and problems solving in pharmacy.
- Able to understand physiology, pathophysiological mechanisms, biochemical processes, diagnosis of various pathological conditions, understand metabolism of bioactive molecules, performing haematological tests & biochemical tests. Basic understanding of organic reactions, identification, preparation, awareness of environmental problems, application of databases in pharmacy.
- Understanding stability, reactivity, standardisation & medicinal uses of organic compounds. Physical, physico-chemical properties & unit operations involved in dosage forms. Basics and pharmaceutical applications of microbiology.
- Gain knowledge on stereochemical aspects, synthesis of organic compounds & derivatives, chemistry, mechanism of action, pharmacology & therapeutic uses of natural & synthetic medicinal compounds. Fundamentals of crude drugs and their medicinal properties, understand & demonstrate chemical kinetics in the formulation of dosage forms.
- Gain knowledge of physico-chemical properties of drug substance, formulation, manufacturing, evaluation and packaging of various solid, liquid and semi-solid dosage forms. Chemistry, preparation, assay, mechanism of action, structure activity relationship, pharmacodynamics, pharmacokinetics of various classes of drugs and their application in treatment of various diseases. Fundamentals, medicinal properties, isolation, characterisation, quality control & evaluation of crude drugs and development of herbal formulations. Indian pharmaceutical acts & laws and regulatory authorities governing the manufacture and sale of pharmaceuticals.
- Gain knowledge in drug design techniques, chemistry, assay, mechanism of action, structure activity relationship & pharmacology of various categories of drugs. Experimental screening models for drug discovery. Biopharmaceutics & pharmacokinetic applications in pharmacotherapy. Learn about raw materials, formulation, quality control, patenting & regulatory requirements of nutraceuticals & herbal cosmetics. Information in techniques, production & uses of biopharmaceuticals. Quality assurance, quality control systems, documentation and validation in pharmaceutical industry.
- Gain knowledge in spectroscopic studies & chromatographic techniques of drugs. Designing & evaluation of novel drug delivery systems. Technology transfer from lab scale to industry, regulatory affairs & quality management systems in pharmaceutical industry. Role of pharmacist in community and hospital. application of knowledge gained in isolation, identification, standardisation, formulation, manufacturing & evaluation of pharmaceuticals.

- Use of statistical principles in research and development of pharmaceuticals. Knowledge of National health programs and pharmacist role. Advanced techniques used in drug design, screening, analysis of pharmaceuticals, cosmetics & nutraceuticals. Methods & importance of reporting adverse drug reactions. knowledge of regulatory science, Pharmaceutical industrial & business management.

PO-1. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO-2. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).

PO-3. Social Interaction: Provide a social exchange between two or more individuals.

PO-4. Effective Citizenship: Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-5. Ethics: Recognize different value and moral systems and correlate them with present system.

PO-6. Environment & Sustainability: To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.

PO-7. Self-Directed & Life-long learning: It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMME SPECIFIC OUTCOMES:

PSO-1. Detail understanding of theoretical and practical knowledge of all core and allied subjects of pharmaceutical sciences, which consist of dosage form design, routes of administration of various drugs, their mechanism of action, chemical moiety involved, doses of drugs, patient treatment, patient counseling, drug dispensing, hospital administration, drug manufacturing, QA/QC and regulation etc.

PSO-2. Highlight the concepts and operative components of pharmacovigilance, clinical pharmacy, hospital pharmacy, community pharmacy, pharmaceutical care, pharmacovigilance, pharmacoconomics, clinical research, clinical pharmacokinetics and other related areas for the benefit of academicians, hospital/community pharmacists and industry, emphasizing the consequences of the use of medications.

PSO-3. Rigorous core course-work in biopharmaceutics, drug transport, pharmacokinetics & pharmacodynamics, drug delivery systems, cell and molecular biology, synthetic and macromolecular chemistry, chemical and biomedical engineering, materials science, physiology and pharmacology.

PSO-4. Emphasis on Drug Discovery and Design, Drug Delivery, Drug Action and Clinical Sciences, Drug Analysis, Cost Effectiveness of Medicines (Pharmacoconomics), Drug Regulatory Affairs etc.

SEMESTER-I

PAPER 1 BP101T. HUMAN ANATOMY AND PHYSIOLOGY-I

Course Outcomes

Upon completion of this course the student should be able to

CO-1. Explain the gross morphology, structure and functions of various organs of the human body.

CO-2. Describe the various homeostatic mechanisms and their imbalances.

CO-3. Identify the various tissues and organs of different systems of human body.

CO-4. Perform the various experiments related to special senses and nervous system.

CO-5. Appreciate coordinated working pattern of different organs of each system

PAPER 2 BP102T. PHARMACEUTICAL ANALYSIS

Course Outcomes

Upon completion of the course student shall be able to

CO-1. understand the principles of volumetric and electro chemical analysis

CO-2. carryout various volumetric and electrochemical titrations

CO-3. develop analytical skills

PAPER 3 BP103T. PHARMACEUTICS- I

Course Outcomes

Upon completion of this course the student should be able to:

CO-1. Know the history of profession of pharmacy

CO-2. Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations

CO-3. Understand the professional way of handling the prescription

CO-5. Preparation of various conventional dosage forms

PAPER 4 BP104T. PHARMACEUTICAL INORGANIC CHEMISTRY

Course Outcomes

Upon completion of course student shall be able to

CO-1. know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals

CO-2. understand the medicinal and pharmaceutical importance of inorganic compounds

PAPER 5 BP105T.COMMUNICATION SKILLS

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. Understand the behavioral needs for a pharmacist to function effectively in the areas of pharmaceutical operation

CO-2. Communicate effectively (Verbal and Non-Verbal)

CO-3. Effectively manage the team as a team player

CO-4. Develop interview skills

CO-5. Develop Leadership qualities and essentials

PAPER 6 BP 106RBT.REMEDIAL BIOLOGY

Course Outcomes

Upon completion of the course, the student shall be able to

CO-1. know the classification and salient features of five kingdoms of life

CO-2. understand the basic components of anatomy & physiology of plant

CO-3. know understand the basic components of anatomy & physiology animal with special reference to human

PAPER 7 BP 106RMT.REMEDIAL MATHEMATICS

Course Outcomes

Upon completion of the course the student shall be able to:-

CO-1. Know the theory and their application in Pharmacy

CO-2. Solve the different types of problems by applying theory

CO-3. Appreciate the important application of mathematics in Pharmacy

SEMESTER-II

PAPER 1 BP 201T. HUMAN ANATOMY AND PHYSIOLOGY-II

Course Outcomes

Upon completion of this course the student should be able to:

CO-1. Explain the gross morphology, structure and functions of various organs of the human body.

CO-2. Describe the various homeostatic mechanisms and their imbalances.

CO-3. Identify the various tissues and organs of different systems of human body.

CO-4. Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etcand also record blood pressure, heart rate, pulse and respiratory volume.

CO-5. Appreciate coordinated working pattern of different organs of each system

PAPER 2 BP202T. PHARMACEUTICAL ORGANIC CHEMISTRY –I

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. write the structure, name and the type of isomerism of the organic compound

- CO-2. write the reaction, name the reaction and orientation of reactions
- CO-3. account for reactivity/stability of compounds,
- CO-4. identify/confirm the identification of organic compound

PAPER 3 BP203 T. BIOCHEMISTRY

Course Outcomes

Upon completion of course student shall be able to

- CO-1. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
- CO-2. Understand the metabolism of nutrient molecules in physiological and pathological conditions.
- CO-3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.

PAPER 4 BP 204T.PATHOPHYSIOLOGY

Course Outcomes

Upon completion of the subject student shall be able to

- CO-1. Describe the etiology and pathogenesis of the selected disease states;
- CO-2. Name the signs and symptoms of the diseases; and
- CO-3. Mention the complications of the diseases.

PAPER 5 BP205 T. COMPUTER APPLICATIONS IN PHARMACY

Course Outcomes

Upon completion of the course the student shall be able to

- CO-1. know the various types of application of computers in pharmacy
- CO-2. know the various types of databases
- CO-3. know the various applications of databases in pharmacy

PAPER 6 BP 206 T. ENVIRONMENTAL SCIENCES

Course Outcomes

Upon completion of the course the student shall be able to:

- CO-1. Create the awareness about environmental problems among learners.
- CO-2. Impart basic knowledge about the environment and its allied problems.
- CO-3. Develop an attitude of concern for the environment.
- CO-4. Motivate learner to participate in environment protection and environment improvement.
- CO-5. Acquire skills to help the concerned individuals in identifying and solving environmental problems.

SEMESTER III

PAPER 1 PHARMACEUTICAL ORGANIC CHEMISTRY –II

Course Outcomes

Upon completion of the course the student shall be able to

- CO-1. write the structure, name and the type of isomerism of the organic compound
- CO-2. write the reaction, name the reaction and orientation of reactions
- CO-3. account for reactivity/stability of compounds,
- CO-4. prepare organic compounds

PAPER 2 BP302T. PHYSICAL PHARMACEUTICS-I (Theory)

Course Outcomes

Upon the completion of the course student shall be able to

- CO-1. Understand various physicochemical properties of drug molecules in the designing the dosage forms
- CO-2. Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations
- CO-3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms

PAPER 3 BP 303 T. PHARMACEUTICAL MICROBIOLOGY (Theory)

Course Outcomes

Upon completion of the subject student shall be able to;

- CO-1. Understand methods of identification, cultivation and preservation of various microorganisms
- CO-2. To understand the importance and implementation of sterilization in pharmaceutical processing and industry
- CO-3. Learn sterility testing of pharmaceutical products.
- CO-4. Carried out microbiological standardization of Pharmaceuticals.
- CO-5. Understand the cell culture technology and its applications in pharmaceutical industries.

PAPER 4 BP 304 T. PHARMACEUTICAL ENGINEERING

Course Outcomes

Upon completion of the course student shall be able:

- CO-1. To know various unit operations used in pharmaceutical industries.
- CO-2. To understand the material handling techniques.
- CO-3. To perform various processes involved in pharmaceutical manufacturing process.
- CO-4. To carry out various test to prevent environmental pollution.
- CO-5. To appreciate and comprehend significance of plant layout design for optimum use of resources.

SEMESTER IV

PAPER 1 BP401T. PHARMACEUTICAL ORGANIC CHEMISTRY –III

Course Outcomes

At the end of the course, the student shall be able to

- CO-1. understand the methods of preparation and properties of organic compounds
- CO-2. explain the stereo chemical aspects of organic compounds and stereo chemical reactions
- CO-3. know the medicinal uses and other applications of organic compounds

PAPER 2 BP402T. MEDICINAL CHEMISTRY – I

Course Outcomes

Upon completion of the course the student shall be able to

- CO-1. understand the chemistry of drugs with respect to their pharmacological activity
- CO-2. understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
- CO-3. know the Structural Activity Relationship (SAR) of different class of drugs
- CO-4. write the chemical synthesis of some drugs

PAPER 3 BP 403 T. PHYSICAL PHARMACEUTICS-II

Course Outcomes

Upon the completion of the course student shall be able to

- CO-1. Understand various physicochemical properties of drug molecules in the designing the dosage forms
- CO-2. Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations
- CO-3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.

PAPER 4 BP 404 T. PHARMACOLOGY-I

Course Outcomes

Upon completion of this course the student should be able to

- CO-1. Understand the pharmacological actions of different categories of drugs
- CO-2. Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.
- CO-3. Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
- 4. Observe the effect of drugs on animals by simulated experiments
- CO-4. Appreciate correlation of pharmacology with other bio medical sciences

PAPER 5 BP 405 T. PHARMACOGNOSY AND PHYTOCHEMISTRY I

Course Outcomes

Upon completion of the course, the student shall be able

- CO-1. to know the techniques in the cultivation and production of crude drugs
- CO-2. to know the crude drugs, their uses and chemical nature
- CO-3. know the evaluation techniques for the herbal drugs
- CO-4. to carry out the microscopic and morphological evaluation of crude drugs

SEMESTER V

PAPER 1 BP501T. MEDICINAL CHEMISTRY – II

Course Outcomes

Upon completion of the course the student shall be able to

- CO-1.** Understand the chemistry of drugs with respect to their pharmacological activity
- CO-2.** Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
- CO-3.** Know the Structural Activity Relationship of different class of drugs
- CO-4.** Study the chemical synthesis of selected drugs

PAPER 2 BP 502 T. Industrial Pharmacy - I

Course Outcomes

Upon completion of the course the student shall be able to

- CO-1.** Know the various pharmaceutical dosage forms and their manufacturing techniques.
- CO-2.** Know various considerations in development of pharmaceutical dosage forms
- CO-3.** Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality

PAPER 3 BP 503 T. PHARMACOLOGY-II

Course Outcomes

Upon completion of this course the student should be able to

- CO-1.** Understand the mechanism of drug action and its relevance in the treatment of different diseases 2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
- CO-2.** Demonstrate the various receptor actions using isolated tissue preparation
- CO-3.** Appreciate correlation of pharmacology with related medical sciences.

PAPER 4 BP504 T. PHARMACOGNOSY AND PHYTOCHEMISTRY II

Course Outcomes

Upon completion of the course, the student shall be able.

- CO-1.** to know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents
- CO-2.** to understand the preparation and development of herbal formulation.
- CO-3.** to understand the herbal drug interactions.
- CO-4.** to carryout isolation and identification of phytoconstituents.

PAPER 5 BP 505 T. PHARMACEUTICAL JURISPRUDENCE

Course Outcomes

Upon completion of the course, the student shall be able to understand:

- CO-1. The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
- CO-2. Various Indian pharmaceutical Acts and Laws
- CO-3. The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
- CO-4. The code of ethics during the pharmaceutical practice

SEMESTER VI

PAPER 1 BP601T. MEDICINAL CHEMISTRY – III.

Course Outcomes

Upon completion of the course student shall be able to

- CO-1. Understand the importance of drug design and different techniques of drug design.
- CO-2. Understand the chemistry of drugs with respect to their biological activity.
- CO-3. Know the metabolism, adverse effects and therapeutic value of drugs.
- CO-4. Know the importance of SAR of drugs.

PAPER 2 BP602 T. PHARMACOLOGY-III

Course Outcomes

Upon completion of this course the student should be able to:

- CO-1. understand the mechanism of drug action and its relevance in the treatment of different infectious diseases
- CO-2. comprehend the principles of toxicology and treatment of various poisonings and
- CO-3. appreciate correlation of pharmacology with related medical sciences.

PAPER 3 BP 603 T. HERBAL DRUG TECHNOLOGY

Course Outcomes

Upon completion of this course the student should be able to:

- CO-1. understand raw material as source of herbal drugs from cultivation to herbal drug product
- CO-2. know the WHO and ICH guidelines for evaluation of herbal drugs
- CO-3. know the herbal cosmetics, natural sweeteners, nutraceuticals
- CO-4. appreciate patenting of herbal drugs, GMP.

PAPER 4 BP 604 T. BIOPHARMACEUTICS AND PHARMACOKINETICS

Course Outcomes

Upon completion of the course student shall be able to:

- CO-1. Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance.
- CO-2. Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe

the kinetics of drug absorption, distribution, metabolism, excretion, elimination.

CO-3. To understand the concepts of bioavailability and bioequivalence of drug products and their significance.

CO-4. Understand various pharmacokinetic parameters, their significance & applications.

PAPER 5 BP 605 T. PHARMACEUTICAL BIOTECHNOLOGY

Course Outcomes

Upon completion of the subject student shall be able to;

CO-1. Understanding the importance of Immobilized enzymes in Pharmaceutical Industries

CO-2. Genetic engineering applications in relation to production of pharmaceuticals

CO-3. Importance of Monoclonal antibodies in Industries

CO-4. Appreciate the use of microorganisms in fermentation technology

PAPER 6 BP606 T: PHARMACEUTICAL QUALITY ASSURANCE

Course Outcomes

Upon completion of the course student shall be able to:

CO-1. understand the CGMP aspects in a pharmaceutical industry

CO-2. appreciate the importance of documentation

CO-3. understand the scope of quality certifications applicable to pharmaceutical industries

CO-4. understand the responsibilities of QA & QC departments

SEMESTER VII

PAPER 1 BP701T. INSTRUMENTAL METHODS OF ANALYSIS

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis

CO-2. Understand the chromatographic separation and analysis of drugs.

CO-3. Perform quantitative & qualitative analysis of drugs using various analytical instruments.

PAPER 2 BP 702 T. INDUSTRIAL PHARMACYII

Course Outcomes

Upon completion of the course, the student shall be able to:

CO-1. Know the process of pilot plant and scale up of pharmaceutical dosage forms

CO-2. Understand the process of technology transfer from lab scale to commercial batch

CO-3. Know different Laws and Acts that regulate pharmaceutical industry

CO-4. Understand the approval process and regulatory requirements for drug products

PAPER 3 BP 703T. PHARMACY PRACTICE

Course Outcomes

Upon completion of the course, the student shall be able to

- CO-1.** Know various drug distribution methods in a hospital
- CO-2.** Appreciate the pharmacy stores management and inventory control
- CO-3.** Monitor drug therapy of patient through medication chart review and clinical review
- CO-4.** Obtain medication history interview and counsel the patients
- CO-5.** Identify drug related problems

PAPER 4 BP 704T: NOVEL DRUG DELIVERY SYSTEMS

Course Outcomes

Upon completion of the course student shall be able

- CO-1.** To understand various approaches for development of novel drug delivery systems.
- CO-2.** To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation

SEMESTER VIII

PAPER 1 BP801T. BIostatistics AND RESEARCH METHODOLOGY

Course Outcomes

Upon completion of the course the student shall be able to

- CO-1.** Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)
- CO-2.** Know the various statistical techniques to solve statistical problems
- CO-3.** Appreciate statistical techniques in solving the problems.

PAPER 2 BP 802T SOCIAL AND PREVENTIVE PHARMACY

Course Outcomes

After the successful completion of this course, the student shall be able to:

- CO-1.** Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.
- CO-2.** Have a critical way of thinking based on current healthcare development.
- CO-3.** Evaluate alternative ways of solving problems related to health and pharmaceutical issues

PAPER 3 BP803ET. PHARMA MARKETING MANAGEMENT

Course Outcomes

The course aims to provide an understanding of marketing concepts and techniques and their applications in the pharmaceutical industry.

PAPER 4 BP804 ET: PHARMACEUTICAL REGULATORY SCIENCE

Course Outcomes

Upon completion of the subject student shall be able to;

- CO-1.** Know about the process of drug discovery and development
- CO-2.** Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
- CO-3.** Know the regulatory approval process and their registration in Indian and international markets

PAPER 5BP 805T: PHARMACOVIGILANCE

Course Outcomes

At completion of this paper, it is expected that students will be able to (know, do, and appreciate):

- CO-1.** Why drug safety monitoring is important?
- CO-2.** History and development of pharmacovigilance
- CO-3.** National and international scenario of pharmacovigilance
- CO-4.** Dictionaries, coding and terminologies used in pharmacovigilance
- CO-5.** Detection of new adverse drug reactions and their assessment

PAPER 6 BP 806 ET. QUALITY CONTROL AND STANDARDIZATION OF HERBALS

Course Outcomes

Upon completion of the subject student shall be able to;

- CO-1.** know WHO guidelines for quality control of herbal drugs
- CO-2.** know Quality assurance in herbal drug industry
- CO-3.** know the regulatory approval process and their registration in Indian and international markets
- CO-4.** appreciate EU and ICH guidelines for quality control of herbal drugs

PAPER 7 BP 807 ET. COMPUTER AIDED DRUG DESIGN

Course Outcomes

Upon completion of the course, the student shall be able to understand

- CO-1.** Design and discovery of lead molecules
- CO-2.** The role of drug design in drug discovery process
- CO-3.** The concept of QSAR and docking
- CO-4.** Various strategies to develop new drug like molecules.
- CO-5.** The design of new drug molecules using molecular modeling software

PAPER 8 BP808ET: CELL AND MOLECULAR BIOLOGY (Elective subject)

Course Outcomes

Upon completion of the subject student shall be able to;

- CO-1.** Summarize cell and molecular biology history.
- CO-2.** Summarize cellular functioning and composition.

CO-3. Describe the chemical foundations of cell biology.

CO-4. Summarize the DNA properties of cell biology.

CO-5. Describe protein structure and function.

PAPER 9 BP809ET. COSMETIC SCIENCE

Course Outcomes

CO-1. Classification of cosmetic and cosmeceutical products Definition of cosmetics as per Indian and EU regulations, Evolution of cosmeceuticals from cosmetics, cosmetics as quasi and OTC drugs

CO-2. Cosmetic excipients: Surfactants, rheology modifiers, humectants, emollients, preservatives. Classification and application

CO-3. Skin: Basic structure and function of skin. Hair: Basic structure of hair.

CO-4. Hair growth cycle. Oral Cavity: Common problem associated with teeth and gums.

PAPER 10 BP810 ET. PHARMACOLOGICAL SCREENING METHODS

Course Outcomes

Upon completion of the course the student shall be able to,

CO-1. Appreciate the applications of various commonly used laboratory animals.

CO-2. Appreciate and demonstrate the various screening methods used in preclinical research

CO-3. Appreciate and demonstrate the importance of biostatistics and research methodology

CO-4. Design and execute a research hypothesis independently

PAPER 11 BP 811 ET. ADVANCED INSTRUMENTATION TECHNIQUES

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. understand the advanced instruments used and its applications in drug analysis

CO-2. understand the chromatographic separation and analysis of drugs.

CO-3. understand the calibration of various analytical instruments

CO-4. know analysis of drugs using various analytical instruments.

PAPER 12 BP 812 ET. DIETARY SUPPLEMENTS AND NUTRACEUTICALS

Course Outcomes

This module aims to provide an understanding of the concepts behind the theoretical applications of dietary supplements. By the end of the course, students should be able to:

CO-1. Understand the need of supplements by the different group of people to maintain healthy life.

CO-2. Understand the outcome of deficiencies in dietary supplements.

CO-3. Appreciate the components in dietary supplements and the application.

CO-4. Appreciate the regulatory and commercial aspects of dietary supplements including health claims.

M.SC. CHEMISTRY

PROGRAMME OUTCOMES:

- To impart knowledge in fundamental aspects of all branches of chemistry.
- To acquire deep knowledge in the study of physical, chemical, electrochemical and magnetic properties, structure elucidation using various techniques and applications of various organic and inorganic materials.
- To acquire basic knowledge in the specialized areas of chemistry and to train the students in various quantitative and qualitative analyses.
- To provide a broad foundation in Chemistry that stresses scientific reasoning and analytical problemsolving with a molecular perspective.
- To make the Department a growing center of excellence in teaching, cutting-edge research, curriculum development and popularizing Chemistry.
- To provide students with the skills required to succeed in M.Sc. the Chemical industry or professional school. To make international collaborations for students and faculty exchange and research cooperation.
- The Department would like to attain worldwide recognition in Chemistry research and teaching.
- To expose the students to a breadth of experimental techniques using modern instrumentation.
- The Department also endeavors to contribute to industry and address problems of societal importance.
- The Department also aims at chemistry outreach in the form of books, online courses, and other chemistry education activities that showcase the role of Chemistry as a central science.

PO-1. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO-2. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).

PO-3. Social Interaction: Provide a social exchange between two or more individuals.

PO-4. Effective Citizenship: Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-5. Ethics: Recognize different value and moral systems and correlate them with present system.

PO-6. Environment & Sustainability: To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.

PO-7. Self-Directed & Life-long learning: It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMME SPECIFIC OUTCOMES:

PSO-1. The programme learning outcomes relating to M.Sc. degree programme in chemistry may include the following: After the completion of the M.Sc. Chemistry programme, the students of our department will be able to:

PSO-2. Work in the interdisciplinary and multidisciplinary areas of chemical sciences and its applications.

PSO-3. Analyze the data obtained from sophisticated instruments (like FTIR, NMR, GCMS, HPLC, GCMS, UVVis, Fluorescence, and TGA) for the structure determination and chemical analysis.

PSO-4. Apply green/sustainable chemistry approach towards planning and execution of research in frontier areas of chemical sciences.

SEMESTER I

PAPER 1 CHC-102: Organic Chemistry-I

Course Outcomes:

Upon successful completion of the Course, the students will be able to: Describe chemical bonding, resonance and hyperconjugation.

CO-1. Explain the concept of aromaticity and describe the various types of aromaticity.

CO-2. Perform aliphatic nucleophilic substitution reactions and differentiate the various types of aliphatic nucleophilic substitution.

CO-3. Explain the stereochemistry substitution reaction and identify the stereochemical notations.

CO-4. Explain the concept of UV-Vis. spectroscopy: Electromagnetic radiation, electronic transitions, BeerLambert law, Fieser-Woodward rules for conjugated dienes and carbonyl compounds.

CO-5. Explain the concept of Describe Optical Rotatory Dispersion and Circular Dichroism, deduction of absolute configuration, octant rule for ketones.

PAPER 2 CHC-103: Physical Chemistry-I

Course Outcomes:

Upon successful completion of the Course, the students will be able to:

CO-1. Explain about Schrodinger equation and the postulates of quantum mechanics.

CO-2. Explain the concept of quantum chemistry, operators, oscillators and numerical

CO-3. Describe the application of perturbation theory to small molecules and applications of variation method and perturbation theory to the helium atom.

CO-4. Discuss about the angular momentum, eigen functions and eigen values of angular momentum.

CO-5. Explain the concept of phase rule and its applications.

PAPER 3 CHC-104: Spectroscopy-I

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Describe and understand the basic profile of electromagnetic radiations, scientific notations for absorption, emission, transmission, reflection, dispersion, polarization and Classify electromagnetic spectrum ion of spectra.

CO-2. Explain basic concept of microwave spectroscopy and classify molecules on the basis of structural parameters like moment of inertia and intermolecular distances.

CO-3. Analyse the effect of isotopic substitution and nonrigid bond and polyatomic molecules, determine the: Rotation of molecules, rotational spectra, diatomic molecules and other structural parameters.

CO-4. Assess linear harmonic oscillator, the vibrating diatomic molecule, the simple harmonic oscillator, the anharmonic oscillator and other supporting models. Analysis of vibrating models for diatomic vibrating rotator, vibration of polyatomic molecules,

CO-5. Describe the overtones and combination frequencies, the influence of rotation on the spectra of polyatomic molecules, the influence of nuclear spin, symmetric top molecules, analysis by Infra-red technique - Group frequencies, outline of technique and instrumentation.

PAPER 4 CHE-101A: Mathematics for Chemist and Computer for Chemist

Course Outcomes:

Upon successful completion of the Course, the students will be able to:

- CO-1. Describe about vectors matrix algebra.
- CO-2. Describe basic rules for integration and applications of integral calculus.
- CO-3. Explain about the elementary differential equations.
- CO-4. Explain about the probability theorems and variance root means square deviation.
- CO-5. Explain the basic and fundamental of computers.

PAPER 5 CHE-101B: Biology for Chemists and Computer for Chemist

Course Outcomes:

Upon successful completion of the Course, the students will be able to:

- CO-1. Function and organization of various bio-molecules present in the living cell.
- CO-2. Structure of amino acid proteins, DNA, RNA, Carbohydrates, Lipids and Vitamins.
- CO-3. Explain about Nucleic Acids i.e. Purine and pyrimidine bases of nucleic acids
- CO-4. Explain about the basic and fundamental of computers.
- CO-5. Describe operating systems, network and language.

SEMESTER II

PAPER 1 CHC-201: Inorganic Chemistry-II

Course Outcomes

Upon successful completion of the Course, the students will be able to:

- CO-1. Describe the formation constant and stability of metal complexes.
- CO-2. Explain reaction mechanism of square planer complexes and trans effect stability of the coordination complexes
- CO-3. Describe the fundamental requirement for interpretation of electronic spectra of metal compound for prediction of their properties.
- CO-4. Describe the studies of metal nitrosyls and its preparation, structures and properties.
- CO-5. Explain the Chemistry of dinitrogen complexes.

PAPER 2 CHC-202: Organic Chemistry-II

Course Outcomes

Upon successful completion of the Course, the students will be able to:

- CO-1. To perform aliphatic and aromatic electrophilic substitution reactions.
- CO-2. To differentiate the various types of aliphatic electrophilic substitution mechanism.
- CO-3. To explain the stereochemistry substitution reaction
- CO-4. To describe various reactions involved in addition to C-C double bond and C-X bond.
- CO-5. To Explain the stereochemical aspects in addition reaction

PAPER 3 CHC-203: Physical Chemistry-II

Course Outcomes

Upon successful completion of the Course, the students will be able to:

- CO-1. Describe and understand the basic principle of unimolecular reactions and fast reaction kinetics
- CO-2. Explain about the adsorption process and its theories
- CO-3. Describe the concept of colloidal material and their stability for many practical uses.
- CO-4. Explain the redox processes in electrochemical systems.
- CO-5. Describe and understand the Debye-Huckel Onsager theory and determination of activity and activity coefficient.

PAPER 4 CHC-204: Spectroscopy-II

Course Outcomes

Upon successful completion of the Course, the students will be able to:

- CO-1. Explain the basic principle of photoacoustic spectroscopy.
- CO-2. Describe and understand the basic methods of X-ray structural analysis of crystals.
- CO-3. Describe the electron diffraction and neutron diffraction and its measurements techniques.
- CO-4. Explain about the structure and functions of biomolecules.
- CO-5. Describe the properties of biopolymer.

PAPER 5 CHC-205: Environmental Chemistry

Course Outcomes:

Upon successful completion of the Course, the students will be able to:

- CO-1. Describe the air, water, pollution by industry, pesticides, microorganism.
- CO-2. Demonstrate knowledge of chemical and biochemical principles of fundamental environmental processes in air, water, and soil.
- CO-3. Recognize different types of toxic substances & responses and analyze toxicological information.
- CO-4. Apply basic chemical concepts to analyze chemical processes involved in different environmental problems (air, water & soil).
- CO-5. Describe experimental methods for analysis of water and soil analysis and pollution awareness to society.

PAPER 6 CHC-206: Inorganic Chemistry-II

Course Outcomes

Upon successful completion of the Course, the students will be able to:

- CO-1. Conduct the experiments for the preparation, characterization of metal complexes
- CO-2. Conduct chemical analyses by qualitative and quantitative analysis of metal complexes
- CO-3. Conduct separation and estimation of amount of metal ions in binary metal ion mixture.
- CO-4. Volumetric and gravimetric analysis.
- CO-5. Interpretation of TG and NMR spectra of some known compounds

PAPER 7 CHC-208: Physical Chemistry-III

Course Outcomes

Upon successful completion of the Course, the students will be able to:

- CO-1. Determination of velocity constant, order of the reaction and energy of activation for saponification.

- CO-2.** Determine the solubility and solubility product of sparingly soluble salts, strength of strong and weak acids, Activity coefficient of zinc ions in the solution of zinc sulphate.
- CO-3.** Determination of strengths of halides in a mixture, valency of mercurous ions potentiometrically.
- CO-4.** Enzyme kinetics -inversion of sucrose, rate constant for hydrolysis/inversion of sugar using a polarimeter

SEMESTER III

PAPER 1 CHC-301: Inorganic Chemistry-III

Course Outcomes:

Upon successful completion of the Course, the students will be able to:

- CO-1.** Describe advanced symmetry concepts of chemical molecules and its applications.
- CO-2.** To identify the axis, plane, center and point group, product of symmetry operation and character table of chemical compounds.
- CO-3.** Chemical application of group theory in spectroscopy.
- CO-4.** Analyze the reaction mechanism of metal complex formation including structure and properties
- CO-5.** Describe the role of metal in biological system and their function.

PAPER 2 CHC-302: Organic Chemistry-III

Course Outcomes:

Upon successful completion of the Course, the students will be able to:

- CO-1.** To describe basics of Nuclear Magnetic Resonance Spectroscopy and its application.
- CO-2.** To describe photochemical reactions and photochemistry of carbonyl compounds.
- CO-3.** To explain the basic concepts of pericyclic reactions.
- CO-4.** To explain sigmatropic rearrangements reactions and to study some important rearrangements reactions in detail.
- CO-5.** To explain various advanced name reactions and their applications.

PAPER 3 CHC-303: Physical Chemistry III: Solid State Chemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

- CO-1.** Describe the principles and kinetics of solid-state reactions.
- CO-2.** Explain about the stoichiometric crystal defects and non-stoichiometry.
- CO-3.** Describe the electronic properties and band theory
- CO-4.** Explain about the electrically conducting solids.
- CO-5.** Describe the types and theories of liquid crystals:

PAPER 4 CHE-301A (ELECTIVE PAPER I): Molecular Dynamics

Course Outcomes

Upon successful completion of the Course, the students will be able to:

- CO-1. Describe the principles of entropy, enthalpy and Gibb's free energy.
- CO-2. Explain about the theory of isotope effects and solvent effects.
- CO-3. Describe the pharmacokinetics and pharmacodynamics of drug.
- CO-4. Explain about the solvation and solvent effects.
- CO-5. Describe the xenobiotics, biotransformation.

PAPER 5 CHE-301B (ELECTIVE PAPER II): Analytical Chemistry

Course outcome

Upon successful completion of the Course, the students will be able to:

- CO-1. Describe quantitative analysis of errors includes F- test, T- test etc.
- CO-2. Explain principles and application of optical methods like AES, AAS, etc.
- CO-3. Learn about the chromatographic and thermo gravimetric techniques and applications.
- CO-4. Explain the principal, instrumentation and application of High-Performance Liquid Chromatography.
- CO-5. Learn about the principal and instrumentation of AAS and Cyclic voltammetry.

PAPER 6 CHE-301C: (ELECTIVE PAPER III): Photochemistry

Course outcome

Upon successful completion of the Course, the students will be able to:

- CO-1. Describe the photochemical excitation and Jablonski diagram.
- CO-2. Explain about the study of photochemistry of ketone-photo reduction-photo cycloaddition.
- CO-3. Describe pericyclic reactions and cyclo addition and sigmatropic reactions.
- CO-4. Describe stereochemical problems in relation to chemical transformations.
- CO-5. Describe synthetically the processes relevant organic-chemical reactions and be able to discuss the mechanism of these reactions.

PAPER 7 CHE-301D (ELECTIVE PAPER IV): Biochemistry

Course outcome

Upon successful completion of the Course, the students will be able to:

- CO-1. Describe the metal ions and K^+/Na^+ pump, Photosystem I and II, and transport and storage of Dioxygen.
- CO-2. Explain the electron transport processes, Biological nitrogen fixation, and its mechanism, nitrogenase, Chemical nitrogen fixation.
- CO-3. Learn about introduction of enzymes, mechanism of enzymes action, and types of reactions catalyzed by enzymes.
- CO-4. Explain about vitamins, coenzymes, prosthetic groups, apoenzymes. Structure and biological functions of coenzyme A, thiamine pyrophosphate, pyridoxal phosphate, NAD^+ , $NADP^+$, FMN, FAD, lipoic acid, vitamin B12.
- CO-5. Explain the endergonic and exergonic reactions, Hydrolysis of ATP, synthesis of ATP from ADP, Nerve Conduction.

PAPER 8 CHE-302A (ELECTIVE PAPER V): Theoretical Chemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Explain the principles of quantum mechanics, Born-Oppenheimer approximation and its breakdown, Hartree-Fock equation.

CO-2. Describe the Maxwell-Boltzmann distribution law of molecular velocities and energies. Bose-Einstein and Fermi-Dirac statistics, Application of Fermi-Dirac and Bose-Einstein statistics.

CO-3. Learn about entropy and probability, Einstein and Debye models, their weaknesses.

CO-4. Explain Onsager's reciprocity relations, electrokinetic phenomena, diffusion, coupled reactions.

CO-5. Fischer's lock and key and Koshland's induced fit hypothesis, concept and identification of active site by the use of inhibitors, affinity labeling and enzyme modification by site-directed mutagenesis. Enzyme kinetics, Michaelis-Menten and Lineweaver-Burk plots, reversible and irreversible inhibition.

PAPER 9 CHE-302B (ELECTIVE PAPER VI): Chemistry of Materials

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. To demonstrate the understanding of materials, their classifications and applications.

CO-2. Describe the objectives of inorganic nanocomposite materials.

CO-3. Explain the mechanism of formation of nanomaterials, role of surfactants in the synthesis of nonmaterial

CO-4. To describe the Basics of metallic clusters, preparation, properties and applications of metallic clusters.

CO-5. Describe the importance and properties of defects in solids.

PAPER 10 CHE-302C (ELECTIVE PAPER VII): Electrochemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. The learner should be able to apply theories in electrochemistry to analyze electrode kinetics

CO-2. To understand representing electrochemical cell

CO-3. Explain various over potential involved during the operation the cell.

CO-4. Apply the knowledge to calculate electrochemical cell parameters, over potential, active surface areas.

CO-5. Learn about the methods of determining kinetic parameters for quasi-reversible and irreversible waves.

PAPER 11 CHE-302D (ELECTIVE PAPER VIII): Medicinal Chemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Describe the SAR and QSAR of drug compounds.

CO-2. Describe methods of drug development including design and discovery.

CO-3. Explain the synthesis and structure SAR of antibiotics.

CO-4. Explain Antibacterials and anti-malarial drug's its chemical structure and its therapeutic properties.

CO-5. Describe the common methods of preparation and its use of Non-steroidal Anti-inflammatory, Antihistaminic and antiasthmatic drugs.

PAPER 12 CHC-304: Inorganic Chemistry-III

Course Outcomes

Upon successful completion of the Course, the students will be able to:

- CO-1. Synthesis, separation and purification of following inorganic compounds, and their characterization.
- CO-2. Application of the techniques and their characterization of coordination complexes

PAPER 13 CHC-306: Physical Chemistry-III

Course Outcomes

Upon successful completion of the Course, the students will be able to:

- CO-1. Experimental determination of chemical reactions.
- CO-2. Measurement of various properties.
- CO-3. Determination of activation energy.
- CO-4. Application related experiments for their research work.

SEMESTER IV

PAPER 1 CHC401: Inorganic Chemistry-IV

Course Outcomes

Upon successful completion of the Course, the students will be able to

- CO-1. Describe the ESR spectroscopy basic principles and its applications to transition metal complexes.
- CO-2. Explain Mossbauer spectroscopy basic principles and its applications.
- CO-3. Learn about the application of group theory to spectroscopy.
- CO-4. Describe structure and function of metalloproteins in electron transport process.
- CO-5. Explain metal complexes in transmission of energy.

PAPER 2 CHC-402: Organic Chemistry-IV

Course Outcomes

To impart advanced knowledge of conjoint spectroscopy. To learn about the mass spectrometry by different techniques.

Course Learning Outcomes: Upon successful completion of the Course, the students will be able to:

- CO-1. Vibrational frequencies of functional groups, λ_{\max} of α , β -unsaturated carbonyl compounds.
- CO-2. Deduction of absolute configuration, Octant rule for ketones.
- CO-3. Structure elucidation of some model organic molecules by UV-Vis, IR, ^1H NMR, ^{13}C NMR and MS.
- CO-4. Learn about the elimination reactions (E2, E1 and E1cB) mechanisms.
- CO-5. Explain about the properties of enzymes and coenzymes.

PAPER 3 CHC-403: Physical Chemistry-IV

Course Outcomes

Upon successful completion of the Course, the students will be able to:

- CO-1. Nuclear spin, nuclear resonance, saturation, J exchange phenomena.

CO-2. Principle of ESR.

CO-3. Photochemistry and photophysical principles, Theory of photoreaction.

CO-4. Steric and Conformational Properties 5. Nucleophilic and Electrophilic Reactivity.

PAPER 4 CHE-401A (ELECTIVE PAPER IX): Organic Synthesis

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Explain disconnection Approach with some examples.

CO-2. Describe the important functional group interconversions in alkene synthesis.

CO-3. Explain the concepts of one-, two-group C-C bond disconnections.

CO-4. Describe the preparation of organoboranes and their synthetic applications.

CO-5. Describe the reagents which causes oxidation in various compounds.

PAPER 5 CHE-401B: (ELECTIVE PAPER X): Polymers

Course Outcomes:

Upon successful completion of the Course, the students will be able to:

CO-1. Describes of fundamental concepts of biological macromolecules.

CO-2. Explain the preparation of high polymers, polymerization steps.

CO-3. Describe fundamental of conducting polymers and their various application.

CO-4. Describe the structure properties of polymers.

CO-5. Explain chemical and spectroscopic analysis of polymers.

PAPER 6 CHE-401C (ELECTIVE PAPER XI): Organo Transitional Metal Chemistry Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Describe the structure and bonding aspects of simple organometallic compounds.

CO-2. Apply different electron counting rules to predict the shape/geometry of organotransition metal compound.

CO-3. Describe the methods of synthesis, properties of mono, di, tri, tetra, penta and hexahaptoorganotransitionmetal compound.

CO-4. Describe the steps of organotransition metal complex catalyzed reaction for value added chemicals.

CO-5. Identify the different types of organotransition metal complexes catalyzed reactions and apply the aboveconcepts to explain different catalytic reactions.

PAPER 7 CHE-401D (ELECTIVE PAPER XII): Solid State Chemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Design and development of materials with pre-required properties based on the structure of solids.

CO-2. Analyze the physical-chemical along with unique optical, electrical, magnetic, thermal, and mechanicalproperties of solids that are distinct for compounds in their solution and/or gas phase.

CO-3. Describe solid state phase relations, their chemical synthesis, and thermodynamically and kinetic parameter's reaction kinetics as well as characterization methods.

CO-4. Develop the method to prepare, purify, and crystallize organic and inorganic solids.

CO-5. Use of spectroscopic, diffraction, microscopic, thermal, and magnetic methods to characterize organic and inorganic solids.

PAPER 8 CHE-402B (ELECTIVE PAPER XIV): Physical Organic Chemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Describe Hückel molecular orbital theory for olefins.

CO-2. Explain the acids, bases, electrophiles, nucleophiles and catalysis.

CO-3. Describe the nature of non-covalent interactions at the basis of the formation of supramolecular compounds which are held together by intermolecular bonds.

CO-4. Describe the fundamentals of supramoleculars, Supramolecular reactions and catalysis and storage of metals and transport across the membrane.

CO-5. Describe the redox reactions by excited metal complexes.

PAPER 9 CHE-402C (ELECTIVE PAPER XV): Heterocyclic Chemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Describe the structures of classes of heterocyclic aromatic organic compounds.

CO-2. Classify simple heterocyclic aromatic compounds as electron deficient or electron rich and explain their reactivity based on these properties.

CO-3. Apply organometallic reactions that applied in heterocyclic chemistry.

CO-4. Explain on a mechanistic level, reactions and synthesis of important electron deficient nitrogen containing heterocycles; pyridines, diazines and their benzo-condensed analogs.

CO-5. Explain on a mechanistic level, reactions and synthesis of important electron rich heterocycles; furans, pyrroles and thiophenes and 1,3-azoles, and benzo-condensed analogs.



Department of PG Studies and Research in Education

Programme Offered

1. B.Ed. (Education)

PROGRAMME OUTCOME:

Aims of B.Ed. Undergraduate Programme The object of this Programme is to describe the achievements and outcomes expressed in terms of knowledge, understanding, skills, attitudes and values expected from this programme of study. The programme is designed keeping in mind innovativeness and flexibility in teaching-learning processes. It should help formulate graduate attributes, qualification descriptors, programme specific learning outcomes and course learning outcomes that are expected to be demonstrated by the student. Care has been taken to ensure the maintenance of international standards in the teacher education programme so as to inculcate in the student the spirit of global competitiveness. After the completion of the programme the student should be able to demonstrate the outcomes given below.

PO-1. Holistic approach: The programme gives an insight into the holistic concept of the Subject.

PO-2. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO-3. Effective Citizenship: Demonstrate social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-4. Ethics: Recognize different value and moral systems and correlate them with present system.

PO-5. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).

PROGRAMME SPECIFIC OUTCOMES:

The programme specific outcomes related to teacher education (B.Ed) Programme are given as under:

PSO-1. Prepare teachers with sound background in perspectives of education along with hands on experience based on field exposure.

PSO-2. Develop a rational conceptualization of pedagogical knowledge and to incorporate it into the specific content areas.

PSO-3. Prepare teachers equipped with knowledge and competencies to conduct as professionals to handle the challenges of the present day classroom.

PSO-4. Develop self-identity as a teacher educator through continuous experiences and reflective practices that continually evaluate the effects of his/her choices and actions.

PAPER 1 Name of the Programme - B.Ed. CC 1 Childhood & Growing Up

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** understanding of different aspects of a child's physical, motor, social and emotional development.
- CO-2.** understand the developmental process of children with diverse abilities in social, cultural and political context.
- CO-3.** Will be able to build sensitivity towards children's developmental needs and capabilities, within their socio-cultural context.
- CO-4.** Sensitive and critical understanding of the different social/educational/cultural/political realities at the core of the exploration into childhood.
- CO-5.** Will be able to build an interdisciplinary frame work to interpret, analyse observations and interactions from cross culture psychology.

PAPER 2 CC 2. Education in India Status, Problems and Issues

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Understanding and perception of the role and functions of a teacher as envisaged in the NPE 1986
- CO-2.** Student Teacher will understand the different projects and schemes at Secondary level in M.P.
- CO-3.** Develop an understanding of the brief historical background of Indian Educational System in India.
- CO-4.** understanding of the objectives and scope of Secondary Education. Page 32 of 127
- CO-5.** Understanding and awareness of professional ethics.

PAPER 3 CC 3. Curriculum Development & School

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Realise the concepts of curriculum and syllabi.
- CO-2.** Design curriculum in the context of school experiences, evaluation, power, ideology, process and practise and its transactional modes.
- CO-3.** Acquaint with the nature and types of curriculum.

PAPER 4 CC 4. Language across the Curriculum

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Recognise nature, function and role of language across the curriculum.
- CO-2.** Acquaint with obstacles in language usage while using the language and ways to overcome them.
- CO-3.** Understand importance and use of first and second language, multilingualism and impact of culture.
- CO-4.** Familiarise the students with the barriers to (Listening, Speaking. Reading Writing LSRW skills and activities for developing these skills.

PAPER 5 CC 4. Language across the Curriculum

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Recognise nature, function and role of language across the curriculum.
- CO-2.** Acquaint with obstacles in language usage while using the language and ways to overcome them.
- CO-3.** Understand importance and use of first and second language, multilingualism and impact of culture.
- CO-4.** Familiarise the students with the barriers to (Listening, Speaking, Reading Writing LSRW skills and activities for developing these skills.

SEMESTER II

PAPER 1: Learning & Teaching

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Aware of different contexts of learning and situate schools as a special environment for learning;
- CO-2.** Reflect on their own implicit understanding of the nature and kinds of learning; Gain an understanding of different theoretical perspectives on learning with a focus on cognitive views of learning as well as social-constructivist theories; Explore the possibilities of an understanding of processes in human
- CO-3.** Cognition and meaning-making them as basis for designing learning environments and experiences at school; and Page 42 of 127
- CO-4.** Appreciate the critical role of learner's based on differences and contexts in making meanings, and hence draw out implications for schools and teachers.

PAPER 2 PC.1. Pedagogy of a School Part I Hindi(A)

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Appreciate the importance of teaching Hindi as a second / third Language.
- CO-2.** Understand the aims and objectives of teaching Hindi.
- CO-3.** Acquire basic skills of language teaching, Aims/Objectives.
- CO-4.** Know the different methods of teaching.
- CO-5.** Prepare a lesson note and teach accordingly. Page 44 of 127

PAPER 3 English (C)

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Master the different techniques, devices of the Second language structure, sounds and vocabulary.
- CO-2.** Understand the status of English language.
- CO-3.** Distinguish between different approaches and methods of teaching English and their use in the classroom.
- CO-4.** Acquire the basic skills of language learning.
- CO-5.** Plan and execute of different types of lessons in prose, poetry according to classroom situations.

PAPER 4 Social Science (D)

Course outcomes–

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Develop understanding about the basic differences between Social Studies and Social Science.
- CO-2.** Understand the need for teaching Social Science as an integrated discipline.
- CO-3.** Develop the ability to justify the Relevance of Social Science in terms of Contemporary events.
- CO-4.** Gain knowledge about the different approaches associated with the discipline.
- CO-5.** Develop certain professional skills useful for classroom teaching

PAPER 5 Biological Science (E)

Course outcomes–

Upon completion of the course, the students-teacher will be able to

- CO-1.** Understand the nature, scope & importance of Biological Sciences and get acquainted with ancient as well as modern developments in the field of Bio-Sciences.
- CO-2.** Understand the Aims, Objectives of teaching Bio-Science and will be able to state the objectives in behavioral terms
- CO-3.** Acquaint with the Resources for teaching Biology & their effective Utilization.
- CO-4.** Exposed to Micro teaching and preparing Resource Unit, Unit Plan & Lesson Plans.
- CO-5.** Understand the concept of curriculum, principles of curriculum construction and trends curriculum revision.

PAPER 6 Mathematics (F)

Course outcomes

Upon completion of the course, the students-teacher will be able to

- CO-1.** Recall the meaning, nature and scope of mathematics.
- CO-2.** Acquaint aims and objectives of teaching mathematics in Secondary school level.
- CO-3.** Plan teaching in mathematics at micro and macro level. Page 61 of 127
- CO-4.** Prepare unit plans, resource unit and organize lesson to meet at different class room situations.
- CO-5.** Analyse and evaluate the curriculum of mathematics at Secondary school level.

PAPER 7 Pedagogy of a School Subject – Part II History(A)

Course outcomes

Upon completion of the course, the students-teacher will be able to

- CO-1.** Understand meaning, scope and importance of History in the school curriculum.
- CO-2.** Acquire content knowledge of methods of history.
- CO-3.** Acquire knowledge of aims and instructional objectives of teaching history
- CO-4.** Acquire skills in planning lessons in History
- CO-5.** Understand and apply the principles of organizing content in the teaching history.

PAPER 8 Geography(B)

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Acquire knowledge about basic facts, concepts, laws principles and trends in Geography
- CO-2.** Acquire knowledge and understanding of the aims and objectives of Geography
- CO-3.** Realize the values of learning geography
- CO-4.** Make use of Audio-visual aids about Geography
- CO-5.** Develop skills in equipping the Geography (i) Museum (ii) Room (iii) Library

PAPER 9 Civics(C)

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Understand meaning, scope and importance of Civics in the school curriculum.
- CO-2.** Acquire content knowledge of methods of Civics.
- CO-3.** Acquire knowledge of aims and instructional objectives of teaching Civics
- CO-4.** Acquire skills in planning lessons in Civics
- CO-5.** Understand and apply the principles of organizing content in the teaching Civics.

PAPER 10 Economics (D)

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Acquire knowledge about basic facts, concepts, laws principles and trends in Economics
- CO-2.** Acquire knowledge and understanding of the aims and objectives of Economics
- CO-3.** Realize the values of learning Economics
- CO-4.** Make use of Audio-visual aids about Economics and Economics
- CO-5.** Develop skills in equipping the Economics (i) Museum (ii) Room (iii) Library

PAPER 11 Chemistry (F)

Course outcomes

Course learning outcomes Upon completion of the course, the students-teacher will be able to:

- CO-1.** Understand the nature, scope and importance of Chemistry with special reference to secondary schoolcontent.
- CO-2.** Understand the aims and objectives of teaching Chemistry.
- CO-3.** State the specific behavioral changes under each objective.
- CO-4.** Understand and make use of different approaches & methods of teaching Chemistry.
- CO-5.** Prepare objective based lesson plans and use them in their internship.

PAPER 12 Total Credit – 5

Course outcomes

Upon completion of the course, the students-teacher will be able to

- CO-1.** Understand the nature, scope and importance of Physics with special reference to secondary school content.
- CO-2.** Understand the aims and objectives of teaching Physics.
- CO-3.** State the specific behavioral changes under each objective.
- CO-4.** Understand and make use of different approaches & methods of teaching Physics.
- CO-5.** Prepare objective based lesson plans and use them in their internship.

PAPER 13 Skills and Strategies of Teaching

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Responds to a variety of Maxims of Teaching.
- CO-2.** Develop the teaching skills of Students.
- CO-3.** Understand the content of application of different strategies of teaching and also implement them.
- CO-4.** Understand the various features of models of teaching effectiveness

SEMESTER III

PAPER 1 AESD 3. Educational Psychology Course outcomes

Upon completion of the course, the students-teacher will be able to: Page 98 of 127

- CO-1.** Identify how we become aware of ourselves, how we learn to interact with others, and how we influence others and how they influence us.
- CO-2.** Identify how psychologists' study human behaviour and how this knowledge can be used to explain, predict, and influence behaviour,
- CO-3.** Identify and critically evaluate psychological research methods.
- CO-4.** Acquire and analyze empirical data.
- CO-5.** Assess the significance and importance of research reports.
- CO-6.** Communicate clearly and effectively in a written format.

SEMESTER IV

PAPER 1 School and Society

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Acquaint the student teachers with the concept of gendered roles in society and their challenges. Page 99 of 127
- CO-2.** Develop an understanding of the inequality and disparities in equal opportunities in education in societal context.
- CO-3.** Enable the student teachers to critically examine the stereotypes and rethink their beliefs.

CO-4. Student teachers to develop abilities to handle notion of gender and sexuality.

PAPER 2 Educational Technology & ICT

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Explain meaning, components, functions of computer and its historical backgrounds.
- CO-2.** Understand the computer peripherals and its organization in computer system.
- CO-3.** Develop skill in handling computer and using word documents.
- CO-4.** Develop skill in computation, analysis and interpretation of data by using Excel Spread sheets.
- CO-5.** Understand the Educational implications of Power Point Presentation and its use in classroom context.
- CO-6.** Understand the applications of Information Technology in the field of teacher education programme and training

PAPER 3 CREATING AND INCLUSIVE SCHOOL

Course outcome

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Identify the children of special needs.
- CO-2.** Understand the nature of special needs their psychoeducational characteristics and functional limitation. Page 107 of 127
- CO-3.** Familiarize with assessment and placement procedure for children with special needs.
- CO-4.** Develop understanding about accommodating special needs in regular classroom.
- CO-6.** Appreciate the education of children with special needs.

PAPER 4 Optional Course: (Any One of the Subject mentioned below)

Course outcomes

Upon completion of the course, the students-teacher will be able to: Page 110 of 127

- CO-1.** Understand the principles, scope and need of guidance and counselling in schools
- CO-2.** Acquaint himself with nature of different problems faced by children in context of learning and development.
- CO-3.** Understand the acquisition and process of learning in children with special needs.
- CO-4.** Acquaint himself with learning disabilities of children and its remedies
- CO-5.** Take up minimum guidance programme at school level.

PAPER 5 B. Environmental Education

Course outcomes

Upon completion of the course, the students-teacher will be able to:

- CO-1.** Understand the concept, significance, scope and terminologies, objectives and programmes of environmental education. Page 113 of 127
- CO-2.** Develop awareness about the various types of pollution, ecological imbalances and life and contribution of environmental activities.

CO-3. Interpret the environmental legislations in conservation and protection of the environment.

CO-4. Understand the role of governmental and non-governmental agencies in environmental education.

CO-5. Apply the methods of teaching and evaluation in environmental education

PAPER 6 Understanding the Self

Course outcomes

Upon completion of the course, the students-teacher will be able to:

CO-1. Facilitate the development of individuals who can take responsibility for their own learning and give a conscious direction to their lives.

CO-2. Students are encouraged to explore and develop through self-reflection a greater insight into their aims of life, strengths and weaknesses and dynamics of formation of identity and a true individuality.

CO-3. Students also develop a capacity for social-relational sensitivity, effective communication skills and ways to create harmony within one's own self and society.

CO-4. Student teachers discover and develop open-mindedness, the attitude of a self-motivated learner, having self-knowledge and self-restraint.

CO-5. Student teachers develop the capacity for sensitivity, sound communication skills and ways to establish peace and harmony.



Department of PG Studies and Research in English

Programme Offered

1. M.A. English

Masters in English Literature (M.A. English)

PROGRAMME OUTCOMES:

The object of this Programme is to describe the achievements and outcomes expressed in terms of knowledge, understanding, skills, attitudes and values expected from this programme of study. The programme is designed keeping in mind innovativeness and flexibility in teaching-learning processes. It should help formulate graduate attributes, qualification descriptors, programme learning outcomes and course learning outcomes that are expected to be demonstrated by the student. Care has been taken to ensure the maintenance of international standards in the teaching of literature in English so as to inculcate in the student the spirit of global competitiveness. After the completion of the programme the student should be able to demonstrate the following outcomes:

- PO-1. Critical Thinking:** Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication:** Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction:** Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship:** Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics:** Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability:** To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning:** It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMME SPECIFIC OUTCOMES:

The programme specific outcomes relating to M.A. English Programme are given as under:

- PSO-1.** Demonstrate a set of basic skills in literary communication and explication of literary practices and process with clarity
- PSO-2.** Demonstrate a coherent and systematic knowledge of the field of English literature showing an understanding of current theoretical and literary developments in relation to the specific field of English studies.
- PSO-3.** Display an ability to read and understand various literary genres and stylistic variations.

PSO-4. Display an ability to write critically.

SEMESTER I

PAPER- 1 Poetry - M.A. English

Course Outcomes

- CO-1. Develop a basic understanding of Shakespearean, Renaissance (Non-Shakespearean) and Non-English drama
- CO-2. Students will gain the ability to understand, analyze and critically appreciate texts in terms of plot construction, socio-cultural contexts and genre of drama.
- CO-3. Engage with the major genres and forms of English literature and develop fundamental skills required for close reading and critical thinking of the texts and concepts
- CO-4. Appreciate and analyze the plays in the larger socio-political and religious contexts of the time.
- CO-5. Develop a clear understanding of Renaissance Humanism that provides the basis for the texts suggested.

PAPER 2 Drama

Course Outcomes

- CO-1. students will be able to trace the rise of print culture and the emergence of genre fiction
- CO-2. Understand and examine the elements of early prose narrative, picaresque novel, historical novel, fiction by women and 19th century realistic novel.
- CO-3. Make special and creative use of language for their expression.
- CO-4. Appreciate the pluralistic and inclusive nature of Indian classical literature and its attributes
- CO-5. Historically situate the classical literature and diverse literary cultures from India, mainly from Sanskrit by focusing on major texts in the principal genres

PAPER 3 (A) Fiction

Course outcomes

- CO-1. Appreciate the diversity of modern Indian literatures and the similarities between them.
- CO-2. Understand and creatively engage with the notion of nation and nationalism.
- CO-3. Appreciate the impact of literary movements on various Indian literatures.
- CO-4. Critically engage with significant social issues like caste and gender.
- CO-5. Understand the historical trajectories of Indian literatures.

PAPER 4 (B) Indian Fiction

Course outcomes

- CO-1. Students will be able to demonstrate conceptual and textual understanding of prose texts.
- CO-2. Students will explore its religious, political, philosophical and cultural aspects of the prescribed texts.
- CO-3. Examine critically representative texts and develop comparative perspectives.

PAPER 5 Prose

Course outcomes

- CO-1. Acquisition of basic knowledge of English speech sounds and speech patterns.
- CO-2. Enhanced listening and speaking skills required for effective and efficient use of language for expression.
- CO-3. recognize/understand the structure and various parts of the language

CO-4. Improved employability through language competency and proficiency.

CO-5. To impart the learner's knowledge of English speech sounds and speech patterns

PAPER 6 Phonetics and Spoken English

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in Poetry 1.

CO-2. Identify the major characteristics and demonstrate in-depth knowledge of pre-romantic poetry,

CO-3. Romantic Poetry, Victorian Poetry, Symbolist Poetry and Modern Poetry.

CO-4. Students will learn how poetic language can help them attain gravity, clarity, depth and

CO-5. complexity in verbal and written expression.

SEMESTER II

PAPER 1 DRAMA

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in Drama.

CO-2. Develop a basic understanding of Restoration Drama, Victorian Drama, Modern Drama and Indian Drama.

CO-3. Develop critical thinking and analytical skills through the study of literary and cultural texts.

CO-4. Examine critically key themes in representatives' texts of the period and develop comparative perspectives

PAPER 2 (B) INDIAN DRAMA

Course outcomes:

CO-1. Appreciate the pluralistic and inclusive nature of Indian Drama and its attributes

CO-2. Critically appreciate the creative use of the English language in Indian Drama

CO-3. Critically engage with Indian literary texts written in English in terms of colonialism/post colonialism, regionalism, and nationalism.

CO-4. Interpret Indian drama and relate it to socio-cultural contexts and experiences.

PAPER III FICTION

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in Fiction.

CO-2. Develop an in-depth understanding of 19th century fiction, rural novel psychological novel, naturalist novel and post naturalist novel.

CO-3. Students will become aware and will be able to develop a better vision and perception of life through their study.

CO-4. Explore and understand the nature of the relationships of human beings to other human beings and other life forms in relation to representative literary texts.

PAPER IV PROSE

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in Prose 1.

CO-2. Enhanced skills and proficient expression gained through evaluation and synthesis of literary and cultural texts

CO-3. Examine different ways of reading and using literary texts across a wide range of authors, genres and periods.

CO-4. Examine different kinds of texts and develop comparative perspectives.

SEMESTER III

PAPER 1 CRITICAL THEORY

Course outcomes

CO-1. Students will acquire skills in the handling of theoretical issues related to the study of literature and culture.

CO-2. Students will become aware of vivid literary traditions of the world and get acquainted with literary studies and analyse text in multiple genres through application of critical and theoretical approaches.

CO-3. Historically situate literary theorists whose works had informed and shaped various literary theoretical discourses

CO-4. Sharpen interpretative skills in the light of various theoretical frameworks

CO-5. Develop awareness of various literary theories and the way they enrich and change our thinking about language, literature and society

PAPER 2 ENGLISH LANGUAGE

Course outcomes

CO-1. Students will be able to recognise and understand the structure and various parts of the language.

CO-2. Identify the various functions language performs and the roles assigned to it.

CO-3. Understand that all languages behave alike and develop a tolerance for other languages.

CO-4. Recognize/understand the structure and various parts of the language.

PAPER 3 (A) INDIAN WRITING IN

Course outcomes:

CO-1. Engage with Indian literary texts written in English and critically appreciate its historical trajectory from colonial times till the present.

CO-2. Develop critical thinking and analytical skills through the study of Indian literary and cultural texts in English.

CO-3. Approach Indian Writing in English from multiple positions based on historical and social locations.

CO-4. To critically appreciate the creative use of the English language in Indian Writing English.

PAPER NO.: IV (A) WRITER SPECIFIC

Course outcomes

CO-1. With in-depth knowledge in Writer Specific Study, students will be able to demonstrate enhanced conceptual and textual understanding with developed critical thinking and analytical skills.

CO-2. To promote knowledge of research methodology and research ethics in students.

CO-3. Refer to authentic sources of information and document the same properly.

CO-4. Discuss and draft a plan for carrying out a piece of work systematically.

PAPER 4 (B) AMERICAN

Course outcomes

CO-1. Students will be able to understand and analyse the diversity of American literature with historical, political, religious and philosophical contexts.

CO-2. Examine and evaluate the American mind from global and Indian perspectives and critically appreciate the complex nature of American society.

CO-3. Appreciate the complexity of the origin and reception of American Literature particularly in relation to writers of European (Anglo-Saxons, French, Dutch and more)

PAPER-5C) LINGUISTICS AND STYLISTICS

Course outcomes

CO-1. Allow the students to develop a linguistic perspective to the study of language.

CO-2. Students will be able to demonstrate proficiency in written and oral communication.

CO-3. Understanding the existence of language in the form of different dialects based on a set of established factors.

CO-4. To identify the various functions a language performs and the roles assigned to it.

PAPER 6 – COMMUNICATIVE AND CONVERSATIONAL ENGLISH

Course outcomes

CO-1. Effective and efficient use of language for their expression and to improve their employability through language competency and proficiency.

CO-2. Language competency will help them become content writers, editors, soft skill trainers, counsellors, voice trainers etc.

CO-3. Think critically or laterally and solve problems

CO-4. Develop the professional ability to communicate information clearly and effectively in all kinds of environment and contexts.

SEMESTER IV

PAPER I - CRITICAL THEORY

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in critical theory

CO-2. Acquire in-depth knowledge of literary theories and critical approaches to English literature.

CO-3. Develop in students the ability and confidence to process understand and examine different kinds of texts.

CO-4. To have a historical overview of major literary theorists, particularly of the 20th century

CO-5. Ability to show an understanding of historical and philosophical contexts that led to the development of literary theory and its practices

PAPER 2 – ENGLISH LANGUAGE

Course outcomes

- CO-1.** Students will be able to enhance and diversify their knowledge acquired in English Language.
- CO-2.** Students will be able to demonstrate proficiency in written and oral communication.
- CO-3.** Understand that all languages behave alike and develop a tolerance for other languages.
- CO-4.** Understand that making errors is a process of learning and not hesitate to use language for the fear of making errors.

PAPER 3 (A) -INDIAN WRITING IN ENGLISH

Course outcomes

- CO-1.** Students will be able to enhance and diversify their knowledge acquired in Indian writing in English.
- CO-2.** Evaluate and synthesise the vision and technique used in Indian novels and perspectives of Indian drama and postcolonial Indian poetry in English.
- CO-3.** Critically engage with Indian literary texts written in English in terms of regionalism and nationalism.

PAPER 3 (B) – COMMONWEALTH LITERATURE IN ENGLISH

Course outcomes

- CO-1.** Students will be able to enhance and diversify their knowledge of Commonwealth literature.
- CO-2.** Students will be able to explore commonwealth literature with historical, political and cultural aspects.
- CO-3.** Examine different ways of reading and using literary texts with comparative perspective

PAPER 4 (A)-WRITER SPECIFIC STUDY

Course outcomes

With in-depth knowledge in Writer Specific Study, students will be able to demonstrate enhanced conceptual and textual understanding with developed critical thinking and analytical skills.

- CO-1.** Develop the ability to pursue research.
- CO-2.** Encourage suitable research to recognize sources.
- CO-3.** To distinguish fact from opinion/ editorialisation
- CO-4.** To produce objective versus subjective pieces.

PAPER 4 (B) -AMERICAN LITERATURE

Course outcomes

- CO-1.** Students will be able to enhance and diversify their knowledge of acquired in American literature.
- CO-2.** Explore and comprehend human relationships in the American spirit and develop a better vision and perception of life.
- CO-3.** Analyse the American mind from global and Indian perspectives and situate it to the contemporary world.

CO-4. Critically appreciate the diversity of American Literature in the light of regional variations in climate,cultural traits and economic priorities.

PAPER 4 (C)- LINGUISTICS AND STYLISTICS

Course outcomes

- CO-1.** Students will be able to enhance and diversify their knowledge acquired in Linguistics in Stylistics.
- CO-2.** Students will be able to demonstrate proficiency in written and oral communication.
- CO-3.** Understand that all languages behave alike and develop a tolerance for other languages.
- CO-4.** Understand that making errors is a process of learning and not hesitate to use language for the fear ofmaking errors.

PAPER 5 MANAGEMENT STUDIES

Course outcomes

- CO-1.** Enhanced reading, writing, listening and speaking skills for effective communication and improvedemployability.
- CO-2.** Students will be able to inculcate profound professional ethics and social values.
- CO-3.** Develop the professional ability to communicate information clearly and effectively in all kinds ofenvironment and contexts.



Department of PG Studies and Research in Law

Programme Offered

1. B.A. LL.B. (Hons.)
2. LLM

B.A. LL.B. (Hons.)

Program Outcome

- To equip students with a sound understanding of the foundations of legal knowledge
- To expose students to a wide range of disciplinary approaches to legal study, encouraging them to reflect on the complexity of legal practice.
- Interpret And analyze the legal and social problems and work towards finding solutions to the problems by application of laws and regulations.
- Inculcate values of Rights and Duties, and transfer these values to real-life through legal and judicial process for promoting community welfare.
- Apply ethical principles and commit to legal professional ethics, responsibilities and norms of the established legal practices.

PO-1. Graduates should be able to do creative research and develop new technologies in the field of concern programme, which can contribute to the industry and to academia.

PO-2. Graduates should be able to practice concern programme in a responsible, professional and ethical manner and implement eco-friendly sustainable technologies for the benefit of industry as well as society.

PO-3. Graduates obtain position in successful career in industry, research institutions, academic, government organizations and entrepreneurship.

PO-4. Graduates to be professionally competent in concern programme to solve the problems in environmental, food, biochemical and biomedical engineering.

PO-5. Graduate to be able to interact with their peers in industry and society as engineering professionals and leaders to set up technical ambience in the society.

Program Specific Outcome

PSO-1. Acquire advance knowledge in the specific field of law chosen for the specialization.

PSO-2. Interpret And Analyze the legal and social problems and work towards finding solutions to the problems by application of laws and regulations.

PSO-3. Students are equipped with the knowledge of teaching methods through the subject on Teaching Pedagogy thereby enabling them to enter the teaching profession.

PSO-4. Through compulsory research component in the form of Dissertation, the students learn to conduct research study.

SEMESTER I

PAPER 1 GENERAL ENGLISH

Course Outcomes

- CO-1.** Understand the language and literary conventions through various texts.
- CO-2.** Develop analytical and critical thinking through reading and discussion.
- CO-3.** Acquire competence in both spoken and written language.
- CO-4.** Participate actively in discussions, debates, & research ventures.
- CO-5.** Understand concept better and also develop ability to write effective propositions in legal context.

PAPER 2 POLITICAL SCIENCE – I (MAJOR)

Course Outcomes

- CO-1.** Understands the world, their country, their society
- CO-2.** Have the knowledge about various political concepts .
- CO-3.** To Understand the connection between Law and Political Science
- CO-4.** Understand the broad and varied nature of Political Science
- CO-5.** To Understand the concepts of rights duties equality etc.

PAPER 3 HISTORY – I (MINOR)

Course Outcomes

- CO-1.** Read and learn to distinguish between primary and secondary written texts (sources) in the field of History
- CO-2.** Learn about the Vedic history
- CO-3.** To have an idea about the administrative system of the Mourays, Guptas, & Harshvardhanas
- CO-4.** To study the history of the Indian Rajput dynasties
- CO-5.** To learn about the vedic system and era

PAPER 4 ECONOMICS – I (MINOR)

Course Outcome

- CO-1.** Relate the micro-economic theory concepts to the practical world.
- CO-2.** Understand and interpret the prevailing market conditions
- CO-3.** Analyse the demand-supply scenario; production and cost scenario
- CO-4.** Illustrate the problems and solution for social and economic welfare of the country
- CO-5.** Describe the efficient distribution patterns for sustainable economy

PAPER 5 LAW OF TORTS

Course Outcome

- CO-1.** To understand the principles of Tortious liability, the defences available in an action for torts.
- CO-2.** Study specific torts against the individual and property.
- CO-3.** Critically analyse damages and liability.
- CO-4.** Analyse the impact of law of Tort on different entities.
- CO-5.** Develop knowledge on defamation, malicious prosecution, conspiracy etc..

PAPER 6 LAW OF CONTRACT

Course Outcome

- CO-1.** Law of Contract familiarizes the students with the various principles governing contracts such as formation, legality, breach and enforcement.
- CO-2.** To study the ideologies of the judges and the subsisting socio-economic circumstances in order to evaluate the judgments.
- CO-3.** The objective of this course is to strengthen the basics of Law of Contracts by explaining them in the easiest ways.
- CO-4.** Furthermore, a comparative of the English law and the Indian law of contract gives a broad insight.
- CO-5.** The attempt will be to identify the point of similarity and divergence between the two jurisdictions

SEMESTER – II

PAPER 1 ENGLISH LITERATURE

Course Outcome

- CO-1.** This will enable students to identify the intersection between law and literature and jurisprudential questions in literary works.
- CO-2.** They will also be able to understand the insights that works of literature can give to the study of law and how literature can enhance our understanding of law.
- CO-3.** Students will be sensitised about social issues and provide them with an opportunity to think about law, by reading genres of literature like poetry, drama, fiction and non-fiction.
- CO-4.** Students will also be initiated into understanding the interplay between law and society, delayed justice, crime and punishment.
- CO-5.** The course will also help the students in honing their writing and analytical skills, as they would be critiquing articles based on the various themes of students

PAPER 2 POLITICAL SCIENCE – II (MAJOR)

Course Outcome

- CO-1.** The course would entail an introduction of ideologies and themes like democracy and justice and also to the ideology of liberalism.

- CO-2.** It will introduce the students to the key ideas of theory of separation of powers and the Constitution
- CO-3.** It will deal with democratic theories and theories of multiculturalism and the issue of post-colonialism and minority rights.
- CO-4.** The students would study about the party system, pressure groups, women's empowerment and public opinion.
- CO-5.** It will introduce the students to the modern theories in the 21st century.

PAPER 3 HISTORY- II (MINOR)

Course Outcome

- CO-1.** The primary objective of this paper is to answer the question how and why the present has evolved from the past in the manner it has.
- CO-2.** History helps us to understand the socio, economic and political context in which legal system emerge and evolve.
- CO-3.** A study of the nature of the state and administrative apparatus is required for proper understanding of the legal systems in ancient and medieval India.
- CO-4.** The paper will offer a close study of select themes, focusing specifically on the intersections in history and law.
- CO-5.** It will also offer understand the influence of various rulers on development of law

PAPER 4 ECONOMICS- II (MINOR)

Course Outcome

- CO-1.** To study the Basic features and structure of Indian Economy
- CO-2.** To have an idea about the Emerging trends in agricultural production
- CO-3.** To study the relationship between Globalization and Indian industry
- CO-4.** To get an analytical impact of the regional variations in economic development
- CO-5.** To examine the impact of poverty and unemployment on Indian economy

PAPER 5 SPECIAL CONTRACT

Course Outcome

- CO-1.** Law student should acquaint himself with the knowledge of special contracts apart from equipping himself with general principles of contract.
- CO-2.** Study of special contracts is necessary for legal services required in a corporate office so that he can enhance his relevance as a lawyer in society
- CO-3.** Define and understand the concept of special contracts and explain the laws related to special Contract in India
- CO-4.** Inculcate the skills of drafting of agreements and various deeds
- CO-5.** Provide the comparative study with the other prevailing laws and laws of the other nations

PAPER 6 CONSTITUTION – I

Course Outcome

- CO-1.** Recognize various basic concepts in the Constitution and understand their applicability and scope.
- CO-2.** Interpret the meaning and scope of Fundamental rights India vis-à-vis their practical implementation onground with case laws along with the restrictions on the freedoms.
- CO-3.** Learn how the Constitutional Remedies protect against violation of fundamental and legal rights.
- CO-4.** Recall about different provisions related to Directive Principle of State Policy. And recognise the perspective of fundamental duties and social justice.
- CO-5.** The students should be able to articulate their independent views over contemporary crucial constitutional issues like Constitutional Supremacy, Rule of law, and Concept of Liberty, organization, Powers and Functions of the various Organs of the Government.

SEMESTER – III

PAPER 1 POLITICAL SCIENCE –III (MAJOR)

Course Outcome

- CO-1.** Have the knowledge about various Indian political concepts.
- CO-2.** Understand the connection between Law and Political Science
- CO-3.** Understand the broad and varied nature of Party System in India
- CO-4.** Having knowledge of organization, powers and functions of judiciary in the country
- CO-5.** Develop an understanding of religion, caste, regionalism and language in India

PAPER 2 HISTORY –III (MINOR)

Course Outcome

- CO-1.** To acquire and have an understanding of the pre independence history
- CO-2.** To understand the impact of British system on administration, law and justice, economic infrastructure,etc.
- CO-3.** To analyze the impact of social and religious movements
- CO-4.** To study the social reforms
- CO-5.** To have specific knowledge Constitutional development in India

PAPER 3 HINDI LANGUAGE – I

Course outcome

- CO-1.** Enables other state students to continue their learning Hindi language phase without any disruptions.
- CO-2.** Through this language they can learn spirituality, social discrimination and grammar techniques
- CO-3.** Enables them to enhance their Hindi language skills
- CO-4.** Enables them to develop creative writing in Hindi
- CO-5.** To learn about the importance of Hindi in freedom movement

PAPER 4 COMPANY LAW

Course Outcome

- CO-1.** To make the students understand the formation, management and other activities of the companies.
- CO-2.** To explain the important developments that have taken place in the corporate sector and important regulations pertaining to the issue of shares and the capital raising have come into force.
- CO-3.** This course aims to impart the students, the corporate management, control, possible abuses, the remedies and government regulation of corporate business and winding up of companies.
- CO-4.** Communicate and interact meaningfully with the corporate professionals on the issues relating to regulatory compliances companies have to follow in the Indian corporate business environment.
- CO-5.** To have a knowledge of various forums meant for the purpose of redressal of company case

PAPER 5 JURISPRUDENCE (LEGAL METHOD, INDIAN LEGAL SYSTEM AND BASIC THEORY)

Course Outcome

- CO-1.** This course is designed to serve as a general introduction to jurisprudence – the philosophy of law and a mix of classic and modern jurisprudential texts.
- CO-2.** Applying theory to practice, have a series of case studies examining major Supreme Court majority and dissenting opinions that turn on deeper jurisprudential debates.
- CO-3.** By learning the legal Jurisprudence students will know important questions like, what is law, what are the purposes of law? The relationship between law and justice and the like and to analyze the legal concepts.
- CO-4.** Students explain the differences between the major schools of jurisprudence concerning the nature of law.
- CO-5.** Identify the major and minor premises of legal arguments, invent and defend arguments about the requirements of justice in legal disputes that reference and extend the themes of the course.

PAPER 6 FAMILY LAW - I (HINDU LAW)

Course Outcome

- CO-1.** Students will understand the fundamental principles of Family Law.
- CO-2.** To acquire knowledge on generally prevailing substantive and procedural rules, principles, institutions and processes governing the formation of marriage.
- CO-3.** Understand the concept of various matrimonial reliefs and the procedure thereof.
- CO-4.** Know the provisions related to adoption, maintenance and intestate succession.
- CO-5.** Study the various important case laws on the different aspects of family law.

SEMESTER – IV

PAPER – I POLITICAL SCIENCE

Course outcome

- CO-1.** To understand the minds of various philosophers in different eras
- CO-2.** To know about the impact of the thinkers on Indian polity
- CO-3.** To acquire knowledge about the Indian political thinkers like Swami Vivekanand, M.K. Gandhi, B.R. Ambedkar

CO-4. To know the Individualistic and Fascist movements

CO-5. To study the impact of Marxist and socialist thought on the world and Indian scenario

PAPER 2 ECONOMICS

Course outcome

CO-1. Develop ideas of the basic characteristics of Indian economy, its potential on natural resources.

CO-2. Understand the importance, causes of Inflation and deflation in economic development.

CO-3. Grasp the importance of planning undertaken by RBI

CO-4. Have knowledge on difference between internal and International Trade.

CO-5. Understand agriculture as the foundation of economic growth and development, analyse the IBRD (WorldBank) , India IMF and its functions

PAPER 3 HINDI LANGUAGE – II

Course outcome

CO-1. To able to understand the tools of translation

CO-2. To able to understand Hindi words and construction of sentences

CO-3. To able to understand and conduct interviews

PAPER 4 CONSTITUTION – II

Course Outcome

CO-1. To understand the structure of executive, legislature and judiciary

CO-2. To understand philosophy of panchayti raj

CO-3. To understand the autonomous nature of constitutional bodies like public service commission, election commission of India.

CO-4. To understand the central and state relation, financial and administrative

CO-5. To acquire concrete knowledge of Proclamation of emergency

PAPER 5 ADMINISTRATIVE LAW

Course Outcome

CO-1. To understand the functioning of administrative authorities

CO-2. Students will learn about the Nature Development of law relating to administration and effective means of administrative control further they will be

CO-3. The Focus is on their role in protecting the rights of individuals against abuse of administration and adjudicatory powers of the administration and liability of administrative authorities.

CO-4. Know about the different agencies which keeps a check on administrative authorities and delegation of powers to the administrative authorities

CO-5. Know about the informal methods for settlement of administrative disputes.

PAPER 6 FAMILY LAW II (MUSLIM LAW)

Course Outcome

CO-1. Students will be studying codified and uncodified portions of Mohammedan Law.

- CO-2. Know the concepts of muslim law. and the sources, schools, institutions, succession
- CO-3. Understand the concept of various matrimonial reliefs and the procedure thereof.
- CO-4. To know the provisions of the Indian Succession Act vis a vis Muslim Law
- CO-5. Know about the various important case laws on the different aspects of Muslim law.

SEMESTER V

PAPER 1 POLITICAL SCIENCE - V (MAJOR)

Course outcome

- CO-1. Students will be studying the salient features of British Constitution
- CO-2. Know the concepts of Constitution of America
- CO-3. Understand the concept federal assembly, federal council, direct democracy of Swiss Constitution
- CO-4. To know the provisions of the Constitution of China
- CO-5. To have a Comparative study of federal system of America and Switzerland

PAPER 2 ENVIRONMENTAL LAW

Course Outcome

- CO-1. To inculcate the sense of responsibility and to respond the needs of environment protection as a part of their fundamental duty.
- CO-2. Studying the Global conventions and the international environment scenario.
- CO-3. Learning the important principles like inter-generation equity, carrying capacity, sustainable development.
- CO-4. Studying important judgments of Supreme Court.
- CO-5. Understanding principles relating to environment like precautionary principle, polluter pay principles and the law in practice.

PAPER 3 LABOUR & INDUSTRIAL LAW – I

Course Outcome

- CO-1. To have an effective human resource practice, the knowledge of Labour Legislation is an indispensable part especially in the Indian scenario.
- CO-2. To enable the students to have a good base in Labour Law, and its legal aspects.
- CO-3. To know the development and the judicial setup of Labour Laws. To learn the salient features of welfare and wage Legislations.
- CO-4. To learn the laws relating to Industrial Relations, Social Security and Working conditions.
- CO-5. To understand the laws related to working conditions in different settings and the judicial setup of Labour Laws.

PAPER 4 LAW OF CRIMES - I (INDIAN PENAL CODE)

Course Outcome

- CO-1. The objective behind teaching this course is to deal with the basic principles of criminal law and its associated liability & punishment.
- CO-2. To study kinds of crime which are committed in society

CO-3. Understand the system of administration of criminal justice in India

CO-4. To know the definition of various crimes and the prescribed punishment for it.

PAPER 5 INTELLECTUAL PROPERTY

Course Outcome

CO-1. Law student should acquaint himself with the knowledge of intellectual property

CO-2. The knowledge of international scenario, viz., the Berne, Convention, Universal Copyright, Convention, the Paris Convention Trips, the World Intellectual Property Rights Organization (WIPO)

CO-3. Understanding the law relating to copyright, trademarks and patents.

CO-4. To study Copyright protection in computer software and hardware, internet, electronic music and scientific research

CO-5. The processes involved in acquiring IP

SEMESTER – VI

PAPER 1 INTERNATIONAL RELATION AND ORGANIZATION (MAJOR)

Course Outcome

CO-1. Use analytical intellectual tools to examine global issues.

CO-2. To examine international of International Relations, different approaches (Theory of power), International organization - UNO

CO-3. Critically analyze the meaning and Elements of National power of military force, economic organization etc.

CO-4. To know about Major problems: North and South Rivalries Indian Ocean

CO-5. To study the importance of regional organization in international politics.

PAPER 2 LEGAL LANGUAGE AND LEGAL WRITING

Course Outcome

CO-1. Understand the language and literary conventions through various texts

CO-2. Develop analytical and critical thinking through reading, writing and discussion.

CO-3. Acquire competence in translation and re-translation. Learn to use idioms and phrases in legal contexts.

CO-4. Have knowledge of phonetics.

CO-5. Understand legal concept better and also develop ability to write effective propositions in legal context.

PAPER 3 CIVIL PROCEDURE CODE & LIMITATION ACT

Course Outcome

CO-1. This course of C.P.C is designed to Study the importance of procedural law.

CO-2. To acquaint the students with the various stages through which a civil case passes through, and the connected matters.

CO-3. The course also includes law of limitation. Understand the reason for the existence of civil rules of practice, limitation. Given the historical and cultural context in which the rules developed.

CO-4. Understand the preliminary issues involved in civil cases.

CO-5. Identify the order, purpose and content of major pleadings in Magistrate's and High courts and analyze and evaluate information from statutes, case acts and rules.

PAPER 4 LABOUR & INDUSTRIAL LAW –II

Course Outcome

CO-1. Understand the origin development and effects of social welfare

CO-2. Describe the formation of international Labour organization under the Convention

CO-3. Analyse the provisions related to the benefits of employee under the Payment of Bonus Act and penal consequences.

CO-4. Understand the procedure to protect women and children under Child Labour (Prohibition and Protection) Act.

CO-5. Illustrate the provisions related to the protection of health, safety and security of Labours in the social welfare legislation.

PAPER 5 LAW OF CRIMES – II (CRIMINAL PROCEDURE CODE)

Course Outcome

CO-1. Procedural Law provide for a fair procedure is significant for a just society. To acquaint the student with the set of criminal courts

CO-2. To know the organization of the functionaries, their power and functions at various stages

CO-3. To understand the procedure according to which these powers and functions are to be exercised under the provisions of procedural law.

CO-4. To learn about fair trial Processes

CO-5. To learn about Juvenile delinquency

PAPER 6 INTERPRETATION OF STATUTES

Course Outcome

CO-1. Interpretation of Statutes is designed to understand the true meaning, intent of the maker of the statute.

CO-2. To familiarize the students with various rules of interpretation.

CO-3. Developing the understanding of students to focus on how legislatures are organized and how they enact statutes into law. Included will be a discussion of the process by which the people themselves may enact statutes by initiative or referendum.

CO-4. To understand the extent to which the courts may review the processes by which legislatures and the people enact legislation.

CO-5. Studying the interpretation of statutes by the courts, covering competing normative and descriptive theories of statutory construction

SEMESTER – VII

PAPER 1 PROPERTY LAW

Course Outcome

CO-1. To understand the concept of Property, its origin and its kinds.

CO-2. To understand the nature of rights and duties attached with various kinds of properties and how inter vivos transactions of property take place by act of parties.

CO-3. To understand the nature of property disputes and how they arise.

CO-4. To understand the doctrines that form a systematic and uniform law for transfer of immovable property. Helping student understand how it works as a parallel law to the existing laws of testamentary and intestate transfers.

CO-5. To apply the principles of Justice, Equity and Good Conscience as the law is not exhaustive and enable the future advocates to help the aggrieved party in particular and society in general.

PAPER 2 HUMAN RIGHTS LAW & PRACTICE

Course Outcome

CO-1. Human Rights involve skills expected to be gained by a student through studies

CO-2. Support the student in sharpening competence for augmenting contemporary knowledge base, acquiring new learning and skills, identifying with future studies, engaging systematic, extensive, coherent knowledge and understanding of human rights

CO-3. Study human rights as a whole with its links to related disciplinary areas; critical comprehension of theories, principles and concepts; and understanding of emerging issues in human rights law;

CO-4. Acquire procedural knowledge related to the study of human rights, including research and development

CO-5. To prepare for responsible citizenship with awareness of the relationship between Human Rights, democracy and development and to foster respect for international obligations for peace and development; to impart education on national and international regime of Human Rights.

PAPER 3 MEDIA AND LAW

Course Outcome

CO-1. Discuss media laws in India and the world

CO-2. To study the Right of Freedom of Speech and reasonable restrictions applicable

CO-3. Have knowledge about media regulation in India

CO-4. Demonstrate an understanding of the nature of ethics and morality in journalism

CO-5. Determine the ethical issues of media with case studies

PAPER 4 BANKING LAW

Course Outcome

CO-1. The course of Banking Law is designed to primarily acquaint the students with operational parameters of banking law

CO-2. To study the Evolution of Banking institution in India

CO-3. To teach the general principles of banking law and to develop appreciative faculties of the students in statutory as well as case – law in this area.

CO-4. The purpose of this course is to teach the current law and practice in the field of banking law.

CO-5. Specifically emphasizing the role of banking regulators

PAPER 5 FORENSIC SCIENCE (Optional)

Course Outcome

CO-1. Demonstrate competency in the collection, processing, analyses, and evaluation of evidence.

CO-2. Demonstrate competency in the principles of crime scene investigation, including the

recognition, collection, identification, preservation, and documentation of physical evidence.

CO-3. Demonstrate an understanding of the scientific method and the use of problem-solving within the field of forensic science.

CO-4. Identify the role of the forensic scientist and physical evidence within the criminal justice system.

CO-5. Demonstrate the ability to document and orally describe crime scenes, physical evidence, and scientific processes and identify and examine current and emerging concepts and practices within the forensic science field.

PAPER 6 INTERNATIONAL ORGANIZATION (OPTIONAL)

Course Outcome

CO-1. To define, understand, and use concepts and terms relevant to the study of international organizations;

CO-2. To apply a body of factual knowledge directly relevant to understanding the impact of international organizations.

CO-3. To study relation between domestic and international politics;

CO-4. To apply alternative explanations for the emergence and evolution of international organizations.

CO-5. To know the different United Nation Organizations

PAPER 7 DRAFTING PLEADING AND CONVEYANCING (CLINICAL COURSE)

Course Outcome

CO-1. Legal drafting skills are of utmost importance to all lawyers but are often difficult to master. Despite the challenges of mastering the art, the most effective lawyers are those who actively implement strategies to improve their drafting skills.

CO-2. Drafting requires a host of skills to be effective. This course will help the students to enhance legal drafting skills.

CO-3. It not only focuses on the theory of effective drafting guidelines but also provides relevant formats to assist in understanding practical application of concepts and develop necessary skills for drafting legal documents.

CO-4. The course is intended to improve the ability to draft quality legal documents.

CO-5. To acquire expertise in both civil and criminal side

SEMESTER – VIII

PAPER 1 LAW OF EVIDENCE

Course Outcome

CO-1. The course is designed to acquaint the students with the rules of evidence in relation to relevancy of facts and proof.

CO-2. Analyse and define the concept and general nature of evidence, and illustrate the different types of evidence and court procedures relating to evidence.

CO-3. Analyse the rule relating to relevance of evidence and admissibility of evidence before the court.

CO-4. Evaluate the rules relating to dying declaration and admissibility of dying declaration

CO-5. To study the important decisions of Supreme Court

PAPER 2 GENDER JUSTICE & FEMINIST JURISPRUDENCE

Course Outcome

- CO-1.** To introduce students to key writings, concepts, principles and discourses in feminist jurisprudence.
- CO-2.** To study the position of Women in Pre- Independence India
- CO-3.** To acquire knowledge on inequality in different family law in area of women rights
- CO-4.** To enable the students to critically examine statutes, judgments and discourses on law through the feminist lens; and
- CO-5.** To facilitate informed discussions and deliberations among students on law and gender justice in India.

PAPER 3 HEALTH LAW

Course Outcome

- CO-1.** Explain key legal principles relevant to the fields of health law studied in this course, including principles of negligence, consent, privacy and confidentiality, and regulation.
- CO-2.** Apply legal principles to a range of health law problems.
- CO-3.** Compare and contrast different legal and policy approaches to addressing health law problems.
- CO-4.** Critique and justify options for law reform to address controversial areas in health law and policy.
- CO-5.** Apply various case laws to the area of health.

PAPER 4 INVESTMENT & SECURITY LAWS (OPTIONAL)

Course Outcome

- CO-1.** Students will understand the characteristics of different financial assets such as money market instruments, bonds, and stocks, and how to buy and sell these assets in financial markets.
- CO-2.** Students will understand the benefit of diversification of holding a portfolio of assets, and the importance played by the market portfolio.
- CO-3.** Students will know how to apply different valuation models to evaluate fixed income securities, stocks, and how to use different derivative securities to manage their investment risks.
- CO-4.** Acquire knowledge of law relating to investment & security
- CO-5.** Understand the various judgments relating to investment & security

PAPER 5 CRIMINOLOGY, PENOLOGY, CRIMINAL ADMINISTRATION AND VICTIMOLOGY

Course Outcome

- CO-1.** Understand the various dimensions of the various aspects of the Indian law related to penology and victimology;
- CO-2.** Understand the various aspects of the Indian legal structure like that of the concepts of restorative justice and compensatory schemes for victims;
- CO-3.** Demonstrate a thorough and contextual knowledge of penal laws .
- CO-4.** Study various leading cases particularly in its application to real law problems.

PAPER 6 INTERNATIONAL HUMAN RIGHTS (OPTIONAL)

Course Outcome

- CO-1.** Human Rights involve skills expected to be gained by a student through studies of various international declaration and conventions.
- CO-2.** To study human rights in international prospective as a whole with its links to related disciplinary areas;

critical analysis of various commissions and conventions & understanding of emerging issues in International human rights law;

CO-3. Acquire various procedural and theoretical knowledge related to the study of International human rights.

PAPER 7 PROFESSIONAL ETHICS, ACCOUNTABILITY FOR LAWYERS & BAR BENCH RELATION

Course Outcome

CO-1. The course on professional ethics is designed to imbibe students with high ethical values forming the basis of the profession.

CO-2. Identify situations of professional dilemmas

CO-3. Recall and explain the principles of professional ethics

CO-4. Take appropriate decisions when faced with any dilemma of professional ethics.

CO-5. Interview and counsel clients in a professional manner and apply the basic principles of professional accountancy.

SEMESTER – IX

PAPER 1 PRINCIPLES OF TAXATION

Course Outcome

CO-1. To provide students with a working knowledge of the fundamental tax principles and rules that applies to commonly encountered transactions undertaken by companies and individuals – the compliance objective

CO-2. To instill an awareness in students that taxes can and often do constitute significant costs to businesses and households and therefore can have a major impact in economic and other decision-making, but that these costs are also potentially controllable through legitimate tax minimization strategies – the planning objective; and

CO-3. to enable students to appreciate the wider economic, social, administrative-compliance and political contexts within which taxes are imposed – the POLICY objective. Traditional tax courses overly emphasize the first objective, i.e. compliance with

PAPER 2 LOCAL SELF GOVERNMENT INCLUDING PANCHYAT ADMINISTRATION

Course Outcome

CO-1. To have a knowledge Local self Government- meaning, evolution

CO-2. To study the Constitution Provisions

CO-3. To understand the concept of The Municipalities and Nagar Palika Adhiniyam

CO-4. To have a knowledge of the cases pertaining to above.

PAPER 3 DIRECT TAXATION(OPTIONAL)

Course Outcome

CO-1. Utilize the definitions of the various components of income tax law.

CO-2. Complete federal income tax returns, including schedules to the Form 1040, and be able to calculate the correct amount of federal income tax

CO-3. Analyze simple fact situations and recognize income tax ramifications

CO-4. Apply basic tax concepts to simple fact situations and communicate potential income tax ramifications in writing and orally.

CO-4. Apply an understanding of the different ways a case can progress from audit to court.

PAPER 4 PROBATION & PAROLE (OPTIONAL)

Course Outcome

CO-1. Study the History of the development of Criminal Jurisprudence.

CO-2. The student will obtain a basic understanding of community corrections concepts.

CO-3. The student will understand the policy implications of community corrections practice.

CO-4. The student will be able to put community corrections practice in a national context.

CO-5. The student will learn how to think critically about community corrections issues.

PAPER 5 MARITIME LAW (OPTIONAL)

Course Outcome

CO-1. Identify and assess relevant legal scholarly literature in maritime law.

CO-2. Understand and apply advanced legal theory and method in this area.

CO-3. Give and receive comments to ongoing scholarly work in a constructive way.

CO-4. Study United Nations and Convention

CO-5. Ability to use theoretical and methodological tools to analyze key issues of maritime law in a scientific manner.

PAPER 6 INSURANCE LAW (OPTIONAL)

Course Outcome

CO-1. Understand the basic principles of insurance law;

CO-2. Explain and apply the general principles of insurance law;

CO-3. Understand the legislation that regulates insurance,

CO-4. Provide an overview of the interaction between legislation and the common law relating to insurance;

CO-5. Understand the operation of insurance law in a practical context.

PAPER 7 OFFENCE AGAINST CHILD & JUVENILE (OPTIONAL)

Course Outcome

CO-1. Work efficiently and with critical engagement with various concepts of Criminal law in relation to child protection, having due regard to the practical implementation of the principles in actual cases

CO-2. Develop coherent, comprehensive and persuasive arguments from an adversarial point of view;

CO-3. Understand the various dimensions of the various aspects of crime and criminal behavior and the implementation of the law through judicial interpretation, etc;

CO-4. Demonstrate a thorough and contextual knowledge of various offences under the I.P.C, JJ Act 2015 and the various leading cases, particularly in its application to real life legal scenario.

PAPER 8 PRIVATE INTERNATIONAL LAW (OPTIONAL)

Course Outcome

- CO-1.** To study about the basic theories, including the history of PIL thoughts and views, conflict of laws and conflict rules, general problems arising from the application of conflict rules; personal law
- CO-2.** To know about the choice of law issues in specific areas, including status, family, succession, property, contracts and torts.
- CO-3.** Transnational civil litigation including the jurisdiction of adjudication, service and taking evidence abroad, and recognition and enforcement of foreign judgments.
- CO-4.** To examine the process of legitimacy and legitimating.
- CO-5.** To study the judgments relating to it.

PAPER 9 ALTERNATIVE DISPUTE RESOLUTION (CLINICAL COURSE)

Course Outcome

- CO-1.** ADR mechanism and its comparison with traditional litigation.
- CO-2.** Various ADR techniques in practice and the difference between them.
- CO-3.** Practical procedures for various ADR techniques.
- CO-4.** Interface between domestic and international space in context of various ADR techniques.
- CO-5.** The decisions of various courts.

SEMESTER – X

PAPER 1 PUBLIC INTERNATIONAL LAW

Course Outcome

- CO-1.** Capacity to identify and analyse the complex drivers of dispute behaviour in the community.
- CO-2.** Understanding of the theoretical models of dispute resolution and capacity to analyse their operation in both legal and social contexts.
- CO-3.** Acquire knowledge of ADR Law Development of basic mediation skills, including communication, analysis, and issue identification.
- CO-4.** Capacity to engage in simple dispute resolution systems design.
- CO-5.** Ability to adaptively apply ADR theory in varied practical contexts, including international, industrial, and socio political.

PAPER 2 RIGHT TO INFORMATION – 2005

Course Outcome

- CO-1.** The course is designed to convince the students how the right to information infuses transparency.
- CO-2.** To know the provisions under the Constitution of India.
- CO-3.** To study the dimensions of accountability in governance.
- CO-4.** To understand the ways to prevent abuse of power.
- CO-5.** To have insight on the case laws.

PAPER 3 INDIRECT TAXATION(OPTIONAL)

Course Outcome

- CO-1. Describe indirect taxes and criticisms of these taxes.
- CO-2. Compare and contrast direct tax and indirect tax.
- CO-3. Generate examples of indirect taxes.
- CO-4. Know the recent amendments.
- CO-5. Have knowledge of case laws.

PAPER 3 COMPARATIVE CRIMINAL PROCEDURE (OPTIONAL)

Course Outcome

- CO-1. To study some basic types of Criminal Justice Administration, viz. adversarial and inquisitorial.
- CO-2. To know about the administration of criminal justice adopted in India
- CO-3. The purpose of the comparative study is to find out in what are the procedural distinctions in the investigation, trial and sentencing with respect to the Indian Law-making process for administering criminal justice.
- CO-4. This course also focuses on the powers and functions of the Police, Prosecutors, Defense Attorneys and Judges in different jurisdictions.
- CO-5. To examine the case laws.

PAPER 4 HUMANITARIAN & REFUGEE LAW (OPTIONAL)

Course outcome

- CO-1. The Course is designed to give a complete understanding of the concept of human rights, international law and international humanitarian law.
- CO-2. It helps the student to learn different characteristics of human rights and the landmark developments in the area of human rights.
- CO-3. The course focuses on the origin and development of International Law, and makes the students appreciate the nature and the principles of International Law as a true law.
- CO-4. Further, the course deals with the concept, purpose and basic rules of International Humanitarian Law, and studies contemporary position of Humanitarian Law, Refugee Law and Human Rights.
- CO-5. To know the cases in the field.

PAPER 5 INFORMATION TECHNOLOGY LAW (OPTIONAL)

Course outcome

- CO-1. Explain, distinguish and apply the fundamental legal principles of information technology law covered in the course.
- CO-2. Select and apply a range of approaches to written and oral communication, and apply the critical thinking required to bring about solutions to complex legal problems in the area of information technology law.
- CO-3. Access, use, interpret and apply a range of domestic primary and secondary legal resources to solve complex problems.
- CO-4. Study the case laws.
- CO-5. Understanding the amendments in the field.

PAPER 6 WOMEN AND CRIMINAL LAW (OPTIONAL)

Course outcomes

CO-1. The course women and criminal law designed to Study, what are the legal provisions. enacted to ameliorate position of women.

CO-2. what is the scope and shortcomings in the existing legal regime in this regard.

CO-3. The points of discrimination in various laws.

CO-4. To study the NCW.

CO-5. To examine the judgments of the SC.

PAPER 7 INTERNATIONAL ENVIRONMENTAL LAW (OPTIONAL)

Course Outcome

CO-1. To outline the historic development of international environmental law and to identify and describe its basic principles and rules

CO-2. To outline the international legal system within which these principles and rules have developed.

CO-3. To consider the role of the concept of sustainable development and its impact on international environmental law in terms of attempts to reconcile developmental and environmental objectives.

CO-4. To consider the adequacy of the international legal system to address substantive regional and global environmental concerns and to enable students to assess critically its effectiveness.

CO-5. To examine critically the relevance of human rights and procedural rights to the development and implementation of international environmental law.

PAPER 8 MOOT COURT (CLINICAL COURSE)

Course Outcome

CO-1. Possess the knowledge and understanding of substantive law and procedure possess the ability to identify and understand key legal issues.

CO-2. Apply knowledge and critical thinking skills to perform competent analysis, reasoning and problem solving in a legal context.

CO-3. Possess communication skills including writing and oral advocacy in a legal context.

CO-4. Possess the knowledge, understanding, and appreciation of ethical responsibilities

CO-5. Apply knowledge and critical thinking skills to perform competent analysis, reasoning and problem solving in a legal context.

LL.M.

SEMSTER I

PROGRAMME OUTCOMES

PO-1. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO-2. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).

PO-3. Social Interaction: Provide a social exchange between two or more individuals.

PO-4. Effective Citizenship: Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-5. Ethics: Recognize different value and moral systems and correlate them with present system.

PO-6. Environment & Sustainability: To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.

PO-7. Self-Directed & Life-long learning: It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

Program Specific Outcome

PSO-1. Acquire advance knowledge in the specific field of law chosen for the specialization.

PSO-2. Interpret And analyze the legal and social problems and work towards finding solutions to the problems by application of laws and regulations.

PSO-3. Students are equipped with the knowledge of teaching methods through the subject on Teaching Pedagogy thereby enabling them to enter the teaching profession.

PSO-4. Through compulsory research component in the form of Dissertation, the students learn to conduct research study.

PAPER 1 LAW AND SOCIAL TRANSFORMATION IN INDIA.

Course Outcome

CO-1. The student will understand that this course on Law and Social Transformation explains the constitutional orientation and response to social transformation. It describes the aspects of non-discrimination on the ground of language.

CO-2. The student will be able to Identify affirmative actions necessary for social transformation

CO-3. The student will develop a spirit of inquiry to explore and exploit law and legal institutions as a means to achieve development within the framework of law

CO-4. Analyze the impact of multiculturalism and ethnicity

PAPER 2 INDIAN CONSTITUTIONAL LAW: THE NEW CHALLENGES

Course Outcome

CO-1. Enable the students to understand the mechanism of judicial process of constitutional interpretation involves a technique of adapting the law to meet changing social needs

CO-2. Understand the system of government and the fundamental principles governing its organization stipulated under the Constitution of India

CO-3. To make student understand the working of legal system and processes leads to constitutional developments

CO-4. Comprehend the basic feature of the Constitution of India and the importance of the role of judiciary in ensuring checks and balances; and

CO-5. To study about new challenges and perspectives of constitutional developments

PAPER 3 GROUP –B CRIMINAL LAW B 012 COMPARATIVE CRIMINAL PROCEDURE

Course Outcome

CO-1. Students critically analyze and compare basic Criminal Law issues in different jurisdictions;

CO-2. They will be able to generate their own solutions to Criminal Law problems, and also identify and evaluate the political and social implications of their proposed solutions, and compare these solutions to those offered in other legal traditions and cultures;

CO-3. Interpret theories and doctrines, and give recommendations where appropriate.

CO-4. Ability to analyse various aspects of Criminal Law, review, and synthesize knowledge.

CO-5. Students will read academic texts on Comparative Criminal Law deeply; and communicate basic arguments;

PAPER 4 GROUP E: ENVIRONMENT AND LEGAL ORDER E 030 ENVIRONMENT AND DEVELOPMENT: LAW AND POLICY

Course Outcome

CO-1. Students will be able to get the knowledge about Constitutional provisions for the protection of environment.

CO-2. Learning about the significance of developments in international environmental law and the fundamental principles that have emerged

CO-3. Comprehending the statutory and regulatory mechanisms pertaining to environment in India.

CO-4. Knowing about the importance of public participation through Right to information, Public Interest litigation and other remedies in preserving and protecting environment.

CO-5. Studying the role of international/national environmental institutions, NGOs, civil society and community involvement in promoting the cause of environment.

PAPER 5 GROUP-G CONSTITUTION AND LEGAL ORDER G 042 MASS MEDIA LAW

Course Outcome

CO-1. To discuss and analyze the legal, ethical and regulatory framework governing Media in India.

CO-2. To trace the historical background to the freedom of Press in India.

CO-3. To discuss and analyze the Constitutional framework in relation to freedom of speech and expression, freedom of Press, Right to Privacy.

CO-4. To analyze and evaluate the latest developments and issues in the field of Media Law.

CO-5. To analyze the principles laid down in the judgments of the courts.

PAPER 6 GROUP J: HUMAN RIGHTS LAW J 061 Concept and Development of Human Rights Course

Outcome

CO-1. Have an advanced and integrated knowledge of international and domestic legal and institutional frameworks for the protection and promotion of human rights

CO-2. Be able to understand and critically examine the interrelationships between international, regional and domestic histories, philosophies, policies and practices of human rights law

CO-3. Have an advanced appreciation of the relationship between law and politics, at the international and domestic levels, in the field of human rights law

CO-4. Have the cognitive and technical skills to independently examine and critically evaluate current issues by reference to international and domestic human rights standards

CO-5. Be able to demonstrate autonomy, expert judgment and responsibility as a practitioner and advocate in the field of human rights law

PAPER 7 K 068 ADMINISTRATIVE PROCESS AND JUDICIAL CONTROL

Course Outcome

CO-1. Identify the distinction between the Constitutional Law and Administrative Law;

CO-2. Identify the basic rules and principles followed to render administrative justice;

CO-3. Examine the reasons and evolution of delegated legislation and the functioning of the delegated

authorities within the ambit of the power conferred;

CO-4. Examine the functioning of the special bodies constituted as alternative means for administering justice viz., Administrative Tribunals, Ombudsman, Lokayukta, Lokpal;

CO-5. Analyse the remedies available against administrative actions;

SEMESTER II

PAPER 1 JUDICIAL PROCESS

Course Outcome

CO-1. Students will be able to analyse and evaluate the legal process from a broader juristic perspective.

CO-2. Students will study the nature of judicial process as an instrument of social ordering.

CO-3. This paper exposes the intricacies of judicial creativity and the judicial tools and techniques employed in the process.

CO-4. Understand the major theoretical and empirical approaches to studying judicial decision making, judicial selection, and judicial behavior

CO-5. It familiarizes the students with various theories, different aspects and alternative ways, of attaining justice.

PAPER 2 04 GROUP –B CRIMINAL LAW B 013 PENOLOGY: TREATMENT OF OFFENDERS

Course Outcome

CO-1. Student will be able to know about, The significance of Penology and The features of Traditional and modern Penological approaches

CO-2. This course deals with various theories of crime causation, theories of punishment, juvenile justice and releasing the offenders on probation.

CO-3. Students will be able to Demonstrate the ability to analyse the complex legal, moral and philosophical issues raised by the concept of punishment

CO-4. Demonstrate an understanding of substantive sentencing principles and related theoretical debates

CO-5. It also provides student the knowledge about the treatment of the offenders under imprisonment and alternative to imprisonment.

PAPER 3 B 014 PRIVILEGED CLASS DEVIANCE

Course Outcome

CO-1. Student will be able to understand the concepts of "Criminality of the 'Privileged classes" and the relation between privilege power and deviant behaviour.

CO-2. Able to differentiate between The traditional approaches which highlight "white collar offences", "Socioeconomic offences" or "Crime of the powerful" deal mainly with the deviance of the economically resourceful. The dimension of deviance associated with bureaucracy, the new rich (nouveau riche), religious leaders, and organizations, professional classes and the higher bourgeoisie are not fully captured here.

CO-3. Understand the construction of model so understanding the reality of middle and upper; middle class deviance criminality in India;

CO-4. Critical analyses of legal system responses and Issues and dilemmas in penal and sentencing policies.

CO-5. Analyse dispelling of the commonly held belief that deviance crime is usually associated with the impoverished or improvident

PAPER 4 GROUP-G CONSTITUTION AND EGAL ORDER G 043 PUBLIC UTILITIES LAW

Course Outcome

CO-1. Students will be able to understand that public utilities are government monopolies, which are services rather than commercial enterprises

CO-2. All government policy in regard to such utilities in general and to each utility in particular,

CO-3. Regarding the growth and evolution of the public utilities;

CO-4. Regarding patters of the laws of incorporation and Students will also know the powers, functions andliabilities of the public utilities vis-a-vis their employees, consumers and others.

PAPER 5 G 044 UNION –STATE FINANACIAL RELATIONS

Course Outcome

CO-1. Student will be able to discuss the different forms of government and explain the features and thedistinction between them.

CO-2. To understand the Legislative relations, Administrative and financial relations between the Centre andStates.

CO-3. To understand the various principles of interpretation of lists

CO-4. To understand the various services under union and the states.

CO-5. Will able to know the relations of Centre and states during emergency.

PAPER 6 GROUP J: HUMAN RIGHTS LAW J 062 Human Rights and International Order

Course Outcome

CO-1. Have an advanced and integrated knowledge of international and domestic legal and institutional frameworks for the protection and promotion of human rights

CO-2. Be able to understand and critically examine the interrelationships between international, regional and domestic histories, philosophies, policies and practices of human rights law

CO-3. Be able to analyse, interpret and assess the challenges posed to the implementation of international human rights obligations in the context of globalisation, particularly the increased threat to human rights presented by non-state actors and efforts to develop and strengthen accountability protocols and other mechanisms

CO-4. Synthesize interdisciplinary approaches and contributions to topics such as gender, race, poverty, violence and post-colonialism within a human rights framework.

CO-5. Reflectively evaluate the effectiveness of human rights practice on local, national or international humanitarian efforts.

PAPER 7 J 063 Protection and Enforcement of Human Rights In India

Course Outcome

CO-1. Demonstrate a good understanding of the provision under the constitution of India dealing with human rights

CO-2. Display a good understanding of the nature and scope of special legislation dealing with protection of human rights of marginalized and vulnerable sections.

CO-3. Able to demonstrate a good understanding of the practical application of human rights law to specific human rights problem in India

CO-4. Also able to analyze complex human rights problem and apply relevant provisions of human rights law in India to a hypothetical situation/case study and a theoretical knowledge of the underpinnings of human rights framework in India, its operation and issues associated with its implementation.

CO-5. Be able to demonstrate autonomy, expert judgment and responsibility as a practitioner and advocate in the field of human rights law.

PAPER 8 GROUP K: ADMINISTRATIVE LAW K 068 ADMINISTRATIVE PROCESS AND JUDICIAL CONTROL

Course Outcome

CO-1. Student will be able to know that the procedural fairness is the key to good administrative decision and the various remedies rendered in judicial process clear the way for achieving administrative justice.

CO-2. Understand that the historical evolution of the judicial agencies reviewing administrative procedures, jurisdictional aspects of administrative decision making subjected to review, the grounds on which decisions are challenged, the scope of review of delegated legislation and the limitations on the judicial review of administrative action.

CO-3. Understand the key principles of judicial review

CO-4. Able to critically analyse the relationship between the various grounds of judicial review and process-based issues such as locus standi and the public/private divide

CO-5. understand and offer a critical analysis of non-court-based forms of control of governmental action

PAPER 9 K 069 PUBLIC AUTHORITIES: LIABILITY

CO-1. Understand and identify their understanding of the shape of, and trends in, modern tort law;

CO-2. Explain and able to critically examine and apply the principles of negligence, especially in their particular application to governments and public authorities

CO-3. Understand and able to discuss various contractual liability.

CO-4. Understand and able to discuss Accountability under consumer law.

SEMESTER III

Paper –1 Practical Legal Education and Research Methodology

Course outcome

CO-1. Students will be equipped to appreciate the rationale behind understanding of research and its conceptual aspects.

CO-2. Enables the students to analyze the logical steps involved in conducting the research and take it ahead methodically one step at a time.

CO-3. Enables the students to understand the practical implication of conducting the research .

CO-4. Students will get a grip of collection of data and the most effective utilization of the same to harness the outcome of research.

CO-5. Enables the students to draft the often-required legal documents for professionals.

Paper 2 04 LEGAL EDUCATION AND RESEARCH METHODOLOGY

Course Outcome

CO-1. A post-graduate student of law should get an insight into the objectives of legal education. He should have an exposure to programmes like organization of seminars, publication of law journals and holding of legal aid clinics.

CO-2. To understand how and why Legal Education was Introduced in India and to be able to know and explain the Importance of Legal Education

CO-3. Students will know and understand Ethics in legal profession and also to know what are Challenges to Legal Profession

CO-4. Law is taught in different ways in different countries. The LL.M. course, being intended also to produce lawyers with better competence and expertise, it is imperative that the student should familiarise himself with the different systems of legal education.

CO-5. The lecture method both at LL.B. level and LL.M. level has many demerits. The existing lacunae can be eliminated by following other methods of learning such as case methods, problem method, discussion method, seminar method and a combination of all these methods. The student has to be exposed to these methods so as to develop his skills.

Paper 3 GROUP –B CRIMINAL LAW B 015 DRUG ADDICTION, CRIMINAL JUSTICE AND HUMAN RIGHTS

Course Outcome

CO-1. Describe the behavioral, psychological, physical health and social effects of psychoactive substances on the person using, and significant others

CO-2. Understand the problem of juvenile drug use and legal approaches to them

CO-3. Provide culturally relevant formal and informal education programs that raise awareness and support substance abuse prevention and the recovery process.

CO-4. Able to understand the various social characteristics of drug users, e.g. age, gender, family status, occupation etc

CO-5. Describe principles and philosophy of prevention, treatment and recovery.

Paper 4 B 016 JUVENILE DELINQUENCY

Course Outcome

CO-1. Comparison and analysis of the theoretical explanations of the causes, dynamics, and consequences of juvenile delinquency

CO-2. Differentiate between the various theories of delinquency and discuss how culture, diversity, social stratification, families, schools, neighborhoods and peers may play a role in delinquent behavior.

CO-3. Examination of the environmental influences on delinquency, as well as prevention of juvenile delinquency

CO-4. Have an increased understanding of the issues of law enforcement related to juvenile delinquency

CO-5. Examine the juvenile court system and its handling of cases, as well as other methods of treatment of children and adolescents

Paper 5 GROUP-G CONSTITUTION AND LEGAL ORDER 045 CONSTITUTIONALISM: PLURALISM AND FEDERALISM

Course Outcome

CO-1. Understand the nature of federalism and its various types.

CO-3. Students will get an exposure to various models of pluralism and forms of constitutional governments and federal structures.

CO-4. Recognize the source of judicial review, as well as federal legislative and executive powers in differing areas, as well as principles of federalism. Diversity and pluralism create a structure of polyarchy (power in the hands of many), which is the social equivalent of the principle of checks and balances in a democratic constitution.

CO-5. In a plural society, where different religious as well as linguistic groups have to live together, various rules of accommodation and mutual recognition are incorporated in the Constitution.

Paper 6 G 046 HUMAN RIGHT

Course Outcome

CO-1. An advanced and integrated knowledge of international and domestic legal and institutional frameworks for the protection and promotion of human rights;

CO-2. An advanced appreciation of the relationship between law, politics and society, at the international and domestic levels, in the field of human rights law; and

CO-3. Make a sophisticated assessment of the practical effectiveness of different mechanisms for implementing or enforcing human rights, including domestic courts, national human rights institutions, human rights treaty bodies, international institutions, specialized agencies and non-governmental organizations;

CO-4. Critically appraise source material, including cases from human rights committees and tribunals and reports and summary records from treaty bodies

CO-5. Demonstrate autonomy, expert judgment and responsibility as advocate in the field of human rights law.

Paper 7 GROUP J: HUMAN RIGHTS LAW J 064 HUMAN RIGHTS OF DISADVANTAGED GROUPS: PROBLEMS AND ISSUES IN THE PROTECTION AND ENFORCEMENT

Course Outcome

CO-1. Acquire an understanding of the principles and institutions of human rights law including their origins, assumptions, contents, limits and potential;

CO-2. Identify and evaluate the historical, philosophical, political and cultural developments establishing human rights as a set of global norms, agreements, and procedures.

CO-3. Have the cognitive and technical skills to independently examine and critically evaluate current issues by reference to international and domestic human rights standards

CO-4. Be able to demonstrate autonomy, expert judgment and responsibility as a practitioner and advocate in the field of human rights law of disadvantage group.

CO-5. Indicate ways of extending human rights practice and apply human rights theory to quickly evolving situations.

Paper 8 K 071 LOCAL SELF-GOVERNMENT LAW

Course Outcome

CO-1. Student gets an insight into the introductory aspects, the historical and philosophical background of the local self-government

CO-2. Students will familiarise about the constitutional scheme for the local self-government

CO-3. Student will understand the structure, powers and functions of the rural local self-government

CO-4. Student aims an understanding about the structure, powers and functions of the urban local self-government

CO-5. Students will be able to understand the modern dimensions of local self-government.

SEMESTER IV

PAPER 1 Theory Paper (Dissertation)

Course Outcome

CO-1. students will be able to enhance their research, analytical and writing skills.

CO-2. Analyse the foundational principles of their chosen thesis topic in law, undertake legal research with primary and secondary materials, and evaluate legal information.

CO-3. Apply the law to complex issues, and critique the operation of the law from a policy perspective, individually.

CO-4. Conduct and analyse legal research, and write, individually.

CO-5. Analyse the impact of law from policy perspectives, and in the context of social and cultural diversity.

PAPER 2 CONSTITUTION AND LEGAL ORDER G07 NATIONAL SECURITY, PUBLIC ORDER, AND RULE OF LAW

Course outcome

CO-1. Extensively able to understand and focus on issues related to national security, public order and rule of law.

CO-2. Develop an understanding on preventive detention & Indian Constitution

CO-3. Understand and critically examine the various emergencies (1962, 1965 & 1970) Emergencies

CO-4. Focus on mature understanding on various legislations (COFEPOSA, TADA etc)

CO-5. Develop an understanding for various provisions of martial laws under English law and under

PAPER 3 HUMAN RIGHTS LAW J 066 SCIENCE, TECHNOLOGY AND HUMAN RIGHTS

Course Outcome

CO-1. Understand the historical growth of the idea of human rights

CO-2. Demonstrate an awareness of the international context of human rights

CO-3. Able to understand and develop the interrelationship of science, technology and human rights

CO-4. Understand and develop an interrelation & critical thinking for medical and the law; experiment on human beings & Euthanasia.

CO-5. develop Scientific and Technological Development in Human Rights Ethics; sex determination test, induced abortion, cloning, artificial insemination.



Department of PG Studies and Research in Library & Information Science

Programme Offered

- 1. B.Lib.**
- 2. M.Lib**

Bachelor of library Science B.Lib.

PROGRAMME OBJECTIVES

PO-1. Holistic approach: The programme gives an insight into the holistic concept of the Subject.

PO-2. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO-3. Effective Citizenship: Demonstrate social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-4. Ethics: Recognize different value and moral systems and correlate them with present system.

PO-5. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).

PROGRAMME SPECIFIC OBJECTIVES

PSO-1. To develop in students' potential for critical thinking particularly concerting goals of Library and Informationcenters.

PSO-2. To train students for a professional career in Library and Information Services.

PSO-3. To train students in handling information resources (Print and non-print) to facilitate access and provision of information sources.

PSO-4. To train students in using information technology tools and techniques in information access, service, management and archival activities.

SEMESTER I

Paper 1 BLC 101 Foundation of Library and Information Science

COURSE OBJECTIVE

The Objective of teaching this paper is

CO-1. To develop an Understanding of Role and Importance of libraries, in society

- CO-2. To teach the different types of libraries and their functions.
- CO-3. To provide an Understanding of laws related to libraries and information.
- CO-4. To know the role of national and international library association and organizations.
- CO-5. To provide an Understanding of various library promoters at the national and international level.

Paper 2 BLC 102 Knowledge Organization, Information Processing & Retrieval

COURSE OUTCOME

After studying this paper, students shall be able to 5

- CO-1. Explain the nature and attributes of universe of knowledge.
- CO-2. Elaborate meaning and types of subjects and modes of subject formation
- CO-3. Understand the salient features of major classification schemes
- CO-4. Understand the main and added entries of library catalogue
- CO-5. Understand and various approaches of deriving subject headings

Paper 3 BLC 103 Document Processing: Practice (DDC and AACR-2R)

COURSE OUTCOME

After studying this paper, students shall be able to

- CO-1. Construct class number for documents with simple, compound and complex subjects
- CO-2. Synthesize class numbers by using the DDC – 19th ed.
- CO-3. Be able to use schedule, tables and index of the classification scheme.
- CO-4. The student will get knowledge of how to use relative index in classification scheme
- CO-5. Knowledge of the catalogue codes and standards and create library catalogue

Paper 4 BLC 104 Information Technology: Basic (Theory)

COURSE OUTCOME

After studying this paper, students shall be able to

- CO-1. Understand the structure of computer and functions of its various units
- CO-2. Plan and implement automation in library housekeeping operations and services
- CO-3. Evaluate various library management software's.
- CO-4. Identify and state the features of telecommunication channels, modes, media, modulation, standards and protocols.
- CO-5. Highlight the nature and components of computer networks and their protocols and standards

Paper 5 BLE 101 Project Work

COURSE OUTCOME

After studying this paper, students shall be able to

- CO-1. Understand the functions and routine work of a library and information centre

CO-2. Understand the establishment and management of a library system.

Paper 6 BLE 102 Data Analysis (Practical)

COURSE OUTCOME

After studying this paper, students shall be able to

CO-1. Understand to create effective spreadsheet.

CO-2. Create dynamic report with excels.

CO-3. Manage sets of data. UNIT 1st Introduction to data analysis using spreadsheet

Paper 6 BLS 101Skill Development Personality Development & Soft Skills

COURSE OUTCOME

After studying this paper, students shall be able to

CO-1. Demonstrate a set of basic skills in Personality Development & Soft Skills.

CO-2. Display an ability to understanding of change processes and be able to think critically about obstacles to change.

CO-3. Display an ability to express one self fairly, clearly and correctly.

CO-4. Students will understand and be able to use a process for decision making.

CO-5. The student will be trained in such a way that he will develop life-long learning abilities to cope with the objectives of his concern throughout his life

SEMESTER II

Paper 1 BLC 201 Management of Library and Information Centers

COURSE OUTCOME

After studying this paper, students shall be able to

CO-1. Understand the Fundamentals of Management.

CO-2. Understanding the policies and Process of Libraries, routine activities of libraries.

CO-3. Assimilate the concept of Financial Management and Human Resource Management.

CO-4. To make the students understand the Management technique in organisation of library and information centers

Paper 2 BLC 202 Information Sources, Products and Services

COURSE OUTCOME

After studying this paper, the student will acquire the knowledge of

CO-1. Different types of information sources, e-books, databases and institutional repositories.

CO-2. Evaluation various types of information sources

CO-3. Access to the electronic resources

CO-4. Nature and functions of various national and international information systems and networks

CO-5. Concept of library resource sharing and consorti

Paper 3 BLC 203 Document Processing: Practice (CC and CCC)

COURSE OUTCOME

After studying this paper, students shall be able to

- CO-1.** Construct class number for documents with simple, compound and complex subject
- CO-2.** Synthesize class numbers by using the CC6th revised edition.
- CO-3.** Be able to use schedule, tables and index of the classification scheme.
- CO-4.** The student will get practical knowledge of CCC.
- CO-5.** Knowledge of the catalogue codes and standards and create library catalogue 6. Prepare catalogue entries for various types of information sources

Paper 4 BLC 204 Information Technology

COURSE OUTCOME

After studying this paper, students shall be able to

- CO-1.** Understand the structure of computer and functions of its various units
- CO-2.** Plan and implement automation in library housekeeping operations and services
- CO-3.** Evaluate various library management software's
- CO-4.** Identify and state the features of telecommunication channels, modes, media, modulation, standards and protocols.
- CO-5.** Highlight the nature and components of computer networks and their protocols and standards 6. Examine the concept of library networks and highlight the types and importance.

Paper 5 BLC 205 Internship Programme

COURSE OUTCOME

After studying this paper, students shall be able to

- CO-1.** Understand the real working environment of libraries.
- CO-2.** Understand the various technical functions done in library
- CO-3.** tackle the practical problems providing various library and information services

M.Lib

PROGRAMME OBJECTIVES

- PO-1.** Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2.** Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3.** Social Interaction: Provide a social exchange between two or more individuals.
- PO-4.** Effective Citizenship: Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5.** Ethics: Recognize different value and moral systems and correlate them with present system.

PO-6. Environment & Sustainability: To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.

PO-7. Self-Directed & Life-long learning: It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMME SPECIFIC OBJECTIVES

PSO-1. To develop in students' potential for critical thinking particularly concerning goals of Library and Informationcenters.

PSO-2. To train students for a professional career in Library and Information Services.

PSO-3. To train students in handling information resources (Print and non-print) to facilitate access and provision of information sources.

PSO-4. To train students in using information technology tools and techniques in information access, service, management and archival activities.

SEMESTER I

PAPER 1 INFORMATION AND COMMUNICATION

COURSE OUTCOME

CO-1. Information; characteristics, Nature, Value, and Use of Information

CO-2. Conceptual difference between Data, Information and Knowledge

CO-3. Communication of Information: Information Generation

CO-4. Communication channels, models and barriers

CO-5. Trends in scientific Communication

PAPER 2 INFORMATION ANALYSIS, REPACKAGING AND CONSOLIDATION

COURSE OUTCOME

CO-1. Information Products, Design and Development of information Products, Marketing
RETRIEVAL

CO-1. Cataloguing & Subject Indexing: Principles and Practices

CO-2. Principles of Subject Cataloguing: Assigning Subject Headings, Library of Congress Subject Headings and Sears List of Subject Headings

CO-3. Models –Assigning and Derived

PAPER 4 RESEARCH METHODS AND STATISTICAL TECHNIQUES

COURSE OUTCOME

CO-1. Concepts, Meaning, Need and process of Research Types of Research –Fundamental and Applied including inter disciplinary and multidisciplinary approach Research and development of Scholarship

PAPER 5 INFORMATION TECHNOLOGY: APPLICATION

COURSE OUTCOME

CO-1. Planning and implementation and library automation, Automation, In House operations- Acquisition, Cataloguing, Circulation Serial Control, OPAC, Library Management, Multilingual Bibliographic Databases, Library Automation Software Packages: Their study and Composition

PAPER 6 INFORMATION TECHNOLOGY: APPLICATION (PRACTICE)

COURSE OUTCOME

CO-1. Creation and maintenance of databases by SOUL and others

PAPER 7 KNOWLEDGE ORGANIZATION & INFORMATION PROCESSING

COURSE OUTCOME

CO-1. Classification of Documents by Universal Decimal Classification

PAPER 8 ACADEMIC LIBRARY INFORMATION SYSTEMS

COURSE OUTCOME

CO-1. Academic Libraries. Meaning, Objectives and Functions. Types of academic Libraries. Role of UGC in academic Library development. Collection development and collection management – Book selection principles and policies, procedures and problems.



Department of PG Studies and Research in Mathematics & Computer Science

Programme Offered

- **M.Sc. Mathematics**
- **M.Sc. Computer Science**

M.Sc. Mathematics

PROGRAMME OBJECTIVES

The M.Sc. Mathematics programme's main objectives are

PROGRAMME OBJECTIVES

- PO-1. Critical Thinking:** Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication:** Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction:** Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship:** Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics:** Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability:** To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning:** It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMME SPECIFIC OUTCOMES

On successful completion of the M.Sc. Mathematics programme a student will

- PSO-1.** Have a strong foundation in core areas of Mathematics, both pure and applied.
- PSO-2.** Be able to apply mathematical skills and logical reasoning for problem solving.
- PSO-3.** Communicate mathematical ideas effectively, in writing as well as orally.
- PSO-4.** Have sound knowledge of mathematical modeling, programming and computational techniques as required for employment in industry.

SEMESTER I

PAPER 1 ADVANCED ABSTRACT ALGEBRA –I

Course Outcomes

CO-1. After studying this course, the student will be able to

CO-2. prove Schreier's refinement theorem and Jordan–Holder theorem and also to prove fundamental theorem of arithmetic using Jordan–Holder theorem.

CO-3. count the number of elements, subgroups and able to find the normalizer and centralizer in a group.

CO-4. identify and construct examples of fields, distinguish between algebraic and transcendental extensions, characterize normal extensions in terms of splitting fields and prove the existence of algebraic closure of a field.

CO-5. characterize perfect fields using separable extensions, construct examples of automorphism group of a field and Galois extensions as well as prove Artin's theorem and the fundamental theorem of Galois theory.

PAPER 2 COMPLEX ANALYSIS (MTC-102)

Course Outcomes

After studying this course, the student will be able to

CO-1. understand analytic function as a mapping on the plane, Mobius transformation and branch of logarithm.

CO-2. understand Cauchy's theorems and integral formulas on open subsets of the plane.

CO-3. understand how to count the number of zeros of analytic function, open mapping theorem and Goursat theorem as a converse of Cauchy's theorem.

CO-4. know about the kind of singularities of meromorphic functions which helps in residue theory and contour integrations.

CO-5. handle integration of meromorphic function with zeros and poles leading to the argument principle and Rouché's theorem.

PAPER 3 REAL ANALYSIS (MTC -103)

Course Outcomes

After studying this course the student will be able to

CO-1. to check whether the given function is integrable or not.

CO-2. check the convergence and uniform convergence of the given sequence or series of functions

CO-3. differentiate the functions of several variables and also compute the higher order derivatives of functions of several variables

PAPER 4 TOPOLOGY (MTC -104)

Course Outcomes

After studying this course the student will be able to

CO-1. determine interior, closure, boundary, limit points of subsets projections, subspace topology, order topology, basis and subbasis of topological spaces.

CO-2. check whether a collection of subsets is a basis for a given topological space or not, and determine the topology generated by a given basis.

CO-3. identify the continuous maps between two spaces and maps from a space into product space and determine common topological property of given two spaces.

CO-4. determine the connectedness and path connectedness of the product of an arbitrary family of spaces.

CO-5. determine the metric topology, metrizable space, several standard metrics and the topology generated by them.

PAPER 5 C-Language

Course Outcomes

After studying this course the student will be able to

CO-1. read, understand and trace the execution of programs written in C language.

CO-2. write the C code for a given algorithm.

CO-3. write programs that perform operations using derived data types.

CO-4. solve an algebraic or transcendental equation using an appropriate numerical method.

PAPER 6 Numerical Analysis

Course Outcomes

After studying this course the student will be able to

CO-1. compute the piecewise, spline and bivariate interpolation and approximation by several methods

CO-2. solve the ordinary differential equations using extrapolation methods.

CO-3. solve the boundary value problems by shooting method.

CO-4. interpolate the function with two variables using finite difference and finite element methods.

SEMESTER II

Paper 1 Applied Functional Analysis

Course Outcomes

After studying this course the student will be able to

CO-1. identify the Hilbert space and perform the operations of Cartesian and Tensor products on it.

CO-2. Check the weak convergence, weak compactness and apply several theorems concerning the concept.

CO-3. identify spectrum, particularly point spectrum and resolvent of standard operators like shifts and multiplication and to understand the spectral theorem for bounded linear operators.

CO-4. understand the basic properties of bounded linear operators on normed, Banach and Hilbert spaces and apply these properties to solve simple problems. Understand

CO-5. the concepts of compactness, self-adjointness and positivity of bounded linear operators.

Paper 2 Divergent Series

Course Outcomes

After studying this course the student will be able to

- CO-1.** understand the big O, little o and asymptotic relations.
- CO-2.** check for the regularity and consistency of the given method for summing the divergent series.
- CO-3.** check whether the given series is summable by Holder's method, Cesaro's method or by Abel's method and also establish the relation between Cesaro and Abel's summability.
- CO-5.** understand the Limitation theorem, Tauberian theorems and Littlewood's extension of Tauber's theorem.

Paper 3 Theory of Linear operators

Course 4 Outcomes

After studying this course the student will be able to

- CO-1.** identify spectrum, particularly point spectrum and resolvent of standard operators like shifts and multiplication and to understand the spectral theorem for bounded linear operators.
- CO-2.** understand the basic properties of bounded linear operators on normed, Banach and Hilbert spaces and apply these properties to solve simple problems.
- CO-3.** understand the concepts of compactness, self-adjointness and positivity of bounded linear operators.

Paper 4 Simplicial Homology Theory

Course Outcomes

After studying this course student will be able to

- CO-1.** identify hyperplanes, simplexes and finite simplicial complexes as subsets of a Euclidean space.
- CO-2.** learn the idea of compact triangulable spaces as geometric carriers of finite simplicial complexes (polyhedra).
- CO-3.** learn the use of homological algebra to associate simplicial homology groups with triangulable spaces and illustrate it by computing simplicial homology groups of some well-known compact polyhedral.
- CO-4.** understand the topological invariance of simplicial homology groups (up to homotopy).
- CO-5.** prove important applications of simplicial homology theory like invariance of dimension, Euler's formula, Lefschetz and Brouwer's fixed point theorems, etc.

Paper 5 Approximation Theory

Course Learning Outcomes

After studying this course the student will be able to

- CO-1.** deal with the linear operators and understand the properties of some specific linear operators as Bernstein Polynomial, Fourier series operator.
- CO-2.** use Bohman and Korovkin's theorem to check whether the given operator provides uniform approximation or not.

CO-3. verify the existence of polynomial for best approximation, and study the characteristics of the polynomial for best approximation.

CO-4. use the Chebyshev system, algebraic polynomials and trigonometric polynomials for interpolation.

Paper 6 Operator Theory on Banach Algebra

Course Outcom

After studying this course the student will be able to

CO-1. use Banach algebra techniques to solve problems in mathematics, applied mathematics and mathematical physics.

CO-2. demonstrate understanding of the properties of bounded linear operators on Hilbert spaces.

CO-3. demonstrate understanding of compact and Fredholm operators.

CO-4. solve problems involving infinite matrices and concrete operators in function spaces

Paper 7 Special Functions

Course Outcomes

After studying this course the student will be able to

CO-1. understand integral calculus and special functions of various engineering problem and to know the application of some basic mathematical methods via all these special functions.

CO-2. explain the applications and the usefulness of these special functions.

CO-3. classify and explain the functions of different types of differential equations.

CO-4. understand purpose and functions of the gamma and beta functions, Fourier series and Transformation.

CO-5. use the gamma function, beta function and special functions to: evaluate different types of integral calculus problems and Fourier series to solve differential equations.

Paper 8 Spherical Trigonometry and Astronomy

Course Outcomes

After studying this course the student will be able to

CO-1. to explain and learn fundamental of Spherical Trigonometry

CO-2. to explain properties of right-angle triangle and solution

CO-3. to explain relation between sides & angles of a Spherical triangle.

CO-4. to explain application of Spherical triangle & Examples.

Paper 9 MATLAB

Course Outcomes

After studying this course the student will be able to

CO-1. able to use Matlab for interactive computations.

CO-2. familiar with memory and file management in Matlab.

- CO-3. able to generate plots and export this for use in reports and presentations.
- CO-4. able to program scripts and functions using the Matlab development environment.
- CO-5. able to use basic flow controls (if-else, for, while).

Paper 10 Linear Programming

Course Outcomes

After studying this course the student will be able to

- CO-1. formulate and solve a linear programming problem.
- CO-2. convert standard business problems into linear programming problems and can solve using simplex algorithm.
- CO-3. formulate and solve transportation problems.
- CO-4. formulate and solve the Assignment problem.

SEMESTER III

Paper 1 Algebraic Topology

Course Outcomes

After completing this course a student will be able to

- CO-1. grasp the basics of Algebraic Topology.
- CO-2. determine fundamental groups of some standard spaces like Euclidean spaces and spheres.
- CO-3. understand proofs of some beautiful results such as Fundamental theorem of Algebra, Monodromy theorem, Lifting theorem etc.

Paper 2 Fuzzy Sets and their Applications

Course Outcomes

After studying this course the student will be able to

- CO-1. Construct fuzzy sets with the required membership function.
- CO-2. Compute the α -cut and strong α -cut.
- CO-3. perform the standard operations on fuzzy sets and study their properties.
- CO-4. Apply the extension principle, perform the operation of arbitrary intersection and arbitrary union of fuzzy sets
- CO-5. Use the intuitionistic fuzzy sets when the condition of non-membership is given.

Paper 3 Infinite Matrix and Divergent Series

Course Outcomes

After studying this course the student will be able to

- CO-1. solve all the problems concerning the matrices whatever the order of the matrix may be.
- CO-2. find the reciprocal of the given matrix easily, and will be equipped with many other properties which ease the solution of matrices.

CO-3. do the analysis of the divergent series.

Paper 4 Spline Theory

Course Outcomes

After studying this course the student will be able to

CO-1. Find polynomial interpolation of the given data.

CO-2. Understand piecewise interpolation and broken line interpolation.

CO-3. find parabolic spline interpolation and know the existence and uniqueness of the parabolic spline interpolation.

CO-4. Understand the basic properties and theory of B-splines and implement basic algorithms for B-splines.

Paper 5 Abstract Harmonic Analysis

Course Outcomes

After studying this course the student will

CO-1. be familiar with Banach algebras and their representations.

CO-2. have studied relations between representations of locally compact groups and representations of group algebras.

CO-3. have studied representation theory of compact groups.

CO-4. know the notions of orthonormal basis of space of square integrable functions on compact groups.

CO-5. know positive definite functions, Bochner theorem, semi direct product of groups and their representation.

Paper 6 Integration Theory

Course Outcomes

On completion of the course, the student should be able to

CO-1. use the concepts of measurable set and measurable function.

CO-2. state and explain the construction of the Lebesgue integral and use it.

CO-3. apply the theorems of monotone and dominated convergence and Fatou's lemma.

CO-4. describe the construction of product measure and to apply Fubini's theorem.

CO-5. state and explain properties of L^p spaces

Paper 7 Sobolev Spaces

Course Outcomes

After studying this course the student will be able to

CO-1. understand the use of distribution and test functions.

CO-2. compute the convolutions, Fourier transform and perform other computations using them

CO-3. apply the Riemann-Lebesgue theorem, Plancherel theorem, Holder's inequality, Minkowski's inequality in solving problems.

Paper 8 Wavelets Analysis

Course Outcomes

After studying this course the student will be able to

- CO-1.** explain the applications of wavelets in the construction of orthonormal bases by wavelets.
- CO-2.** understand approximation of functions (signal) by frame theory.
- CO-3.** understand the properties of various scaling functions and their wavelets.
- CO-4.** understand the properties of multiresolution analysis.
- CO-5.** construct the scaling functions using infinite product formula and iterative procedure.

Paper 9 Mathematical modeling

Course Outcomes

After studying this course the student will be able to

- CO-1.** create mathematical models of empirical or theoretical phenomena in domains such as the physical, natural, or social sciences;
- CO-2.** create variables and other abstractions to solve college-level mathematical problems in conjunction with previously-learned fundamental mathematical skills such as algebra;3.
- CO-3.** draw inferences from models using college-level mathematical techniques including problem solving, quantitative reasoning, and exploration using multiple representations such as equations, tables, and graphs

Paper 10 Elective Paper

Course Outcomes

After studying this course the student will be able to

- CO-1.** demonstrate understanding the random variable, expectation, variance and distributions.
- CO-2.** explain the large sample properties of sample mean.
- CO-3.** understand the concept of the sampling distribution of a statistic, and in particular describe the behavior of the sample mean.
- CO-4.** analyze the correlated data and fit the linear regression models.
- CO-5.** demonstrate understanding the estimation of mean and variance and respective one sample and two-sample hypothesis tests.

Paper 11 Operations Research

Course Outcomes

After studying this course the student will be able to

- CO-1.** formulate and solve problems as networks and graphs.
- CO-2.** construct linear integer programming models and discuss the solution techniques.

- CO-3.** set up decision models and use some solution methods for nonlinear optimization problems.
- CO-4.** propose the best strategy using decision making methods under uncertainty and game theory.
- CO-5.** solve multi-level decision problems using dynamic programming method.



Department of PG Studies and Research in Philosophy

Programme Offered

1. M.A. (Philosophy)

M.A. (Philosophy)

First Semester

PROGRAMME OBJECTIVES

- PO-1. Critical Thinking:** Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication:** Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction:** Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship:** Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics:** Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability:** To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning:** It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMME SPECIFIC OUTCOMES

After having done this course, the student is expected to have mastered the art of philosophically reading the given textual excerpts and to understand the issues hermeneutically afresh, keeping in mind the dialogical and pluralistic nuances employed in the epistemic enterprise.

- PSO-1.** This course traces the origins of philosophy in the Western tradition in the thinkers of Ancient Greece.
- PSO-2.** The aim is to make students familiar with and develop a clear understanding of the major concepts such as the Shrutis and Smritis, Karma, Jnana and Bhakti in different systems, Idealism and Materialism, and Preyas, Shreyas and Nihshreyas in Kathopanishads etc within Indian Philosophical studies.
- PSO-3.** Acquainting students with the complex set of interconnected sub-traditions that Analytic Philosophy ramified into and which became equally influential in the twentieth century.
- PSO-4.** To develop student's abilities to understand and examine in detail the key arguments in Philosophy of Mind.

SEMESTER I

Course Outcomes

CO-1. This course facilitates a comprehension of early Greek tradition. A comprehensive understanding of it is like a foundation course in the Classics.

CO-2. The two great classical traditions, viz., Greek and Indian have left a rich legacy of philosophic knowledge that can be pragmatically and scholastically contextualized in the present-day times.

CO-3. Students of University read Indian Philosophy; this course in Greek Philosophy complements it fairly well for understanding of the classics.

PAPRE 2

Course Outcomes

CO-1. Formal logic enhances the reasoning skills and develops ground for rejecting the wrong arguments on the basis of sound inferences.

CO-2. It creates ground for eliminating superstitious beliefs and creates ways for strong arguments.

CO-3. This paper helps in good score that provides better rank in form of results.

CO-4. It trains the student to construct good arguments and also provides valid ground to reject the wrong ones.

PAPRE 3

Course Outcomes

CO-1. To equip the students with tools and techniques for handling socio political issues that affect them on individual / collective basis.

CO-2. Larger awareness of public issues and empathy with marginalised issues in society.

CO-3. 3. Inculcates a sense of ethical responsibility and a vision to challenge the existing norms in need of change.

PAPRE 4

Course Outcomes

CO-1. To introduce yoga education, its principles and practices for holistic growth of students

CO-2. To create yoga experts with in-depth knowledge based on yogic texts.

CO-3. To establish holistic health, social harmony and world peace by training them to be good citizens who can offer social wellbeing.

PAPRE 5

Course Outcomes

CO-1. Indian Intellectual Traditions through basic concepts such as Shruti (agama) and Smriti (Nigama), Karma, Jnana and Bhakti, Indian Idealism vs. Indian Materialism, Preyas, Shreyas and Nihshreyasetc

CO-2. Students will appreciate the Indian Metaphysics of various ancient Indian schools such as Charvaka,

Buddhism, Jainism, Samkhya, Mimamsa and Vedanta. They will become aware of the Metaphysics of various schools which will help them to understand the society at large.

CO-3. In the unit III, students will gain familiarity with the epistemology of Jaina and Nyaya -Vaishesika system. Unit II and Unit III are interrelated in the sense that epistemology of a particular school can be understood through its metaphysics and vice-versa.

CO-4. Students will learn to develop scientific, logical and rational inquiry for understanding the systems. Students will be able to do a comparative analysis of all systems which will further enhance their debating skills. Students will develop the ability to think critically and to read and analyze scientific literature.

CO-5. Students will develop strong oral and written communication skills through the effective presentation of Projects, Quiz as well as through Seminars

SEMESTER II

PAPRE 1

Course Outcomes

This paper seeks to do three things

CO-1. it will enable students to witness how philosophers who were either predecessors or contemporaries evaluated the theories of others, thus will advise them in distinguishing good arguments from bad arguments.

CO-2. It will enable students to have a better understanding of how a man thinks and what goes on into the making of human thought.

CO-3. It will also make students aware that there is no place for superficial approach to the complex questions in life.

PAPER 2

Course Outcomes

CO-1. This course helps in learning the various principles and methods of basic as well as higher logic.

CO-2. Through the development of its special symbols, this course (advanced logic) helps as an instrument for analysis and deduction.

CO-3. It helps in examining more complex arguments for deriving clear rational conclusions.

CO-4. This paper helps in good score that provides better rank in form of results.

CO-5. This is an appropriate paper for applying the logical/mathematical skill and to make use of artificial intelligence effectively.

PAPRE 3

Course Outcomes

CO-1. The students after having run through basic ethical theories gain a better orientation from the ethical perspective.

CO-2. This course helps to understand and interpret events with a more rational basis.

PAPRE 4

Course Outcomes

On completion of this course, the students will have

- CO-1.** Critical understanding of the Evolution of Yoga based on the classical texts
- CO-2.** Understanding the basic theories and practices of Shad-Darshan.
- CO-3.** Knowledge of the concepts of Jnana, Bhakti and karma Yoga.
- CO-4.** Understanding of different Schools of Yoga.

SEMESTER III

PAPRE 1

Course Outcomes

The course in Contemporary Western Philosophy is designed keeping in view the following learning outcomes

- CO-1.** Introducing students to the primary thinkers of one of the most important and influential school of thought in Western Philosophy.
- CO-2.** Acquainting students with the complex set of interconnected sub-traditions that Analytic Philosophy ramified into and which became equally influential in the twentieth century.
- CO-3.** Inculcating young minds with the basic training associated with the tradition, such that it is prepared to engage in critical and reflective thinking.
- CO-4.** Enabling students to reduce complex issues into simpler components that will facilitate clearer understanding.

PAPRE 2

Course Outcomes

- CO-1.** To make students a better citizen.
- CO-2.** To know rights of Individuals and communities.
- CO-3.** To learn to live in cohesive manner in a multicultural setup.

PAPRE 3

Course Outcomes

- CO-1.** The students will acquire a general understanding of religious issues.
- CO-2.** They will learn to think critically about religious issues.

SEMESTER III

PAPRE 1

Course Outcomes

The course in Contemporary Western Philosophy is designed keeping in view the following learning outcomes

CO-1. Introducing students to the primary thinkers of one of the most important and influential school of thought in Western Philosophy.

CO-2. Acquainting students with the complex set of interconnected sub-traditions that Analytic Philosophy ramified into and which became equally influential in the twentieth century.

CO-3. Inculcating young minds with the basic training associated with the tradition, such that it is prepared to engage in critical and reflective thinking.

CO-4. Enabling students to reduce complex issues into simpler components that will facilitate clearer understanding.

PAPRE 2

Course Outcomes

CO-1. To make students a better citizen.

CO-2. To know rights of Individuals and communities.

CO-3. To learn to live in cohesive manner in a multicultural setup

PAPRE 3

Course Outcomes

CO-1. The students will acquire a general understanding of religious issues.

CO-2. They will learn to think critically about religious issues

PAPRE 4

Course Outcomes

CO-1. The students will acquire a general understanding of religious issues.

CO-2. They will learn to think critically about religious issues.

PAPRE 5

Course Outcomes

CO-1. Finally, it will give a holistic development of their personality.

PAPRE 6

Course Outcomes

CO-1. This course is designed to make students philosophically competent about their own decisions, to achieve clarity, develop comprehension skills and reach precision in arguments with reasons.

CO-2. A spectrum of issues ranging from morality, environment, real life situations, moral dilemmas and ongoing philosophical examination of the crisis in the field of artificial intelligence are a part of this course curriculum.

SEMESTER IV

PAPRE 1

Course Outcomes

CO-1. The idea is to encourage the students towards a comparative trajectory where they probe the similarities and differences between the Western and non-Western stands of thought. Hence, one of the key learning outcomes would be and should be to develop comparative skills.

CO-2. Most Western philosophers were also the patriarch of modern statecraft. They imbued moral and ethical considerations quite heavily in their philosophical teachings. Thus, by focusing on individual philosophical thought from original texts, the students would be capable of differentiating between positive and normative worldview.

CO-3. Since Philosophy, whether Western or Oriental, is all about values and rational thinking, the students would develop skills to place any public issue on the edifice of ethical foundations and provide moral weightage to their arguments.

PAPRE 2

Course Outcomes

CO-1. To make students a better citizen.

CO-2. To know rights of Individuals and communities.

CO-3. To learn to live in cohesive manner in a multicultural setup

PAPRE 3

Course Outcomes

CO-1. The students will acquire a general understanding of religious issues.

CO-2. They will learn to think critically about philosophical issues pertaining to various religions.

PAPRE 4

Course Outcomes

CO-1. Finally, it will give a holistic development of their personality.

PAPRE 5

Course Outcomes

CO-1. This course helps to understand and interpret events with a more rational basis.



Department of PG Studies and Research in Physical Education

Programme Offered

1. B.P.E.S.
2. B.P.Ed.
3. M.P.Ed.

B.P.E.S

Programme Outcomes

The graduates and postgraduates of the courses have a wide range of opportunity in different fields. Post Graduate and Ph.D's are qualified to be appointed as Teachers and Sports officer in Universities, Colleges and Physical Education teachers in Schools.

PROGRAMME OBJECTIVES

PO-1. Holistic approach: The programme gives an insight into the holistic concept of the Subject.

PO-2. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO-3. Effective Citizenship: Demonstrate social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-4. Ethics: Recognize different value and moral systems and correlate them with present system.

PO-5. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).

PROGRAMME SPECIFIC OUTCOMES

PSO-1. Improve knowledge about Physical Education

PSO-2. To define and acquaint training preparation of Game/Sports

PSO-3. Develop proficiency in Games & Sports.

PSO-4. To employ the rules and regulation of Game/Sport

SEMESTER I

PAPRE 1 Basic and Systemic Anatomy – I

Course Outcomes

- CO-1. The student will be oriented with the basic structure and function of human body by identifying, comparing and relating different systems, organs and their functional and structural units.
- CO-2. He would be able to Relate and interpret the role of exercise on body systems and its relation to wellbeing, through literature reviews and physical conditioning exercises.
- CO-3. Adapt the art to apply the knowledge of anatomy and physiology in physical activity classes at schoollevel.
- CO-4. Construct anatomy and physiology related pedagogical materials exploring their creative imaginationswhile working in group and using technology.

PAPRE 2 PRINCIPLES OF PHYSICAL EDUCATION– I

Course Outcomes

- CO-1. Students will develop competency in many movement activities.
- CO-2. Students will understand *how* and *why* they move in a variety of situations and use this information toenhance their own skills.
- CO-3. Students will achieve and maintain a health-enhancing level of physical fitness.
- CO-4. Students will exhibit a physically active lifestyle and will understand that physical activity providesopportunities for enjoyment, challenge and self-expression.
- CO-5. Students will demonstrate responsible personal behavior while participating in movement activities.

PAPRE 3 ENGLISH- I

Course Outcomes

- CO-1. The course will develop fundamental knowledge of English Language.
- CO-2. The literary texts shall enable students to inculcate creative & aesthetic sensitivity and criticallycomprehend, appreciate and analyze it.
- CO-3. The students will be familiarized with the basics of language and its structure

SEMESTER II

PAPRE 1

Course Outcomes

- CO-1. The student will be oriented with the basic structure and function of human body by identifying, comparing and relating different systems, organs and their functional and structural units.
- CO-2. He would be able to Relate and interpret the role of exercise on body systems and its relation to wellbeing, through literature reviews and physical conditioning exercises.
- CO-3. Adapt the art to apply the knowledge of anatomy and physiology in physical activity classes at schoollevel.
- CO-4. Construct anatomy and physiology related pedagogical materials exploring their creative imaginationswhile working in group and using technology.

PAPRE 2 HISTORY OF PHYSICAL EDUCATION – II

Course Outcomes

- CO-1.** The pass out would be able to compare the relationship between general education and physical education.
- CO-2.** He would be able to identify and relate with the History of Physical Education.
- CO-3.** He would be able to comprehend the relationship between Philosophy, Education and Physical Education.
- CO-4.** He would be able to identify the works of Philosophers of Education and Physical Education.
- CO-5.** He would know recent developments and academic foundation of Physical Education.

SEMESTER – III

PAPRE 1 PHYSIOLOGY AND PHYSIOLOGY OF EXERCISE

Course Outcomes

- CO-1.** The student would be empowered with the applicable knowledge of physiology in physical activity and sports.
- CO-2.** The learner would be able to incorporate this knowledge in the training and coaching programme for the betterment of his trainee's performance.

PAPRE 2 EDUCATIONAL PSYCHOLOGY

Course Outcomes

- CO-1.** The study would orient the student in basic concepts of psychology.
- CO-2.** The student would be oriented in identifying factors determining one's overall personality.
- CO-3.** He would understand various laws of learning and their relevance in teaching learning process.
- CO-4.** The study would orient him in getting through with the psychology of sports person.

SEMESTER – IV

PAPRE 1 KINESIOLOGY

Course Outcomes

- CO-1.** The student would be Oriented with the skeletal structure of human body by identifying the origin and insertion of various muscles.
- CO-2.** Orient the students in basic structure and functions of primary joints of the body.
- CO-3.** Relate and interpret the role of various mechanical principles in human movement.

PAPRE 2 BASICS OF SPORTS TRAINING

Course Outcomes

- CO-1.** The learners will be able to identify the fundamental concepts, theories and principles of human body training related to sports performance.
- CO-2.** The learners will be able to demonstrate the skills to train different fitness components and related planning.
- CO-3.** The learners will be able to understand the organization to achieve high performance in sports.

PAPRE 3 HEALTH EDUCATION

Course Outcomes

CO-1. The student will be able to identify and synthesize the factors that influence health.

CO-2. The student will be able to recognize the health-related challenges in current time and able to apply the preventive measures.

CO-3. The student will be able to identify the role of peers, community and media in health promotion and protection.

CO-4. The student will be able to demonstrate the expertise in above stated domains in a school setup.

CO-5. The student will be able to value the knowledge and skills required to preserve community health and well-being.

SEMESTER V

PAPRE 1 Management of Physical Education

Course Outcomes

CO-1. The student would understand the importance of management of Physical Education.

CO-2. He shall gain knowledge regarding management of Physical Education and Sports at different level.

CO-3. He will be able to organize various Physical Education program.

CO-4. He would know about various schemes and policies of State & Central Government.

CO-5. He would know about planning of facility and financial management.

PAPRE 2 GYM MANAGEMENT AND FITNESS TRAINING

Course Outcomes

CO-1. Will develop skills to establish daily caloric requirement and to design the diet plan.

CO-2. Will acquaint student with principles of sports nutrition.

CO-3. Will orient the student to the role of food on Physical performance.

CO-4. Would make the student understand and prepare weight management plans.

SEMESTER VI

PAPRE 1 TEST AND MEASUREMENT IN PHYSICAL EDUCATION

Course Outcomes

CO-1. The students will be able to recognize and relate the concept of test, measurement and evaluation in the context of Physical Education.

CO-2. The students will be able to construct and conduct the physical fitness and sports skill test.

CO-3. The students will be able to implement the criteria of test selection. The syllabus would orient the students in the art of applications of test, measurement and evaluation in physical and sports activities with simultaneous development of practical competency in conducting physical fitness and sports skill tests.

PAPRE 2 CORRECTIVES AND REHABILITATION IN PHYSICAL EDUCATION

Course Outcomes

CO-1. He would understand the Prevention, Treatment and Rehabilitation of Athletic Injuries

B. P. Ed.

SEMESTER I

PROGRAMME OBJECTIVES

The graduates and postgraduates of the courses have a wide range of opportunity in different fields. Post Graduate and Ph.Ds are qualified to be appointed as Teachers and Sports officer in Universities Colleges and Physical Education teachers in Schools. Other than these academic opportunities they will also be qualified for appointment as District Sports Officer / Regional sports officer and other administrative post in sports department in Central and State undertakings. These students are also eligible to join different Forces, for examples, Army, Police, B.S.F etc. They are also eligible to undertake the higher studies i.e. M.Phil, Ph.D and D.Lit. in the field of Physical Education and Sports Sciences. Pass out students can also become health / fitness experts in health clubs and hospitality industry and they can start their own health clubs.

PO-1. Holistic approach: The programme gives an insight into the holistic concept of the Subject.

PO-2. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO-3. Effective Citizenship: Demonstrate social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-4. Ethics: Recognize different value and moral systems and correlate them with present system.

PO-5. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).

PROGRAMME SPECIFIC OUTCOMES

PSO-1. Improve knowledge about Physical Education

PSO-2. To employ the rules and regulation of Game/Sport

PSO-3. Able to develop exercise.

PSO-4. Provides opportunity to join different Forces, for examples, Army, Police, B.S.F etc.

PAPRE 1 CC-101 HISTORICAL FOUNDATION OF PHYSICAL EDUCATION

Course Outcomes

After completing this course, the students will be able to

CO-1. Understand the concept of physical education.

CO-2. Understand the historical development of physical education in India and abroad.

CO-3. Describe the different Olympic games and its committees.

CO-4. Classify and Identify the Olympic values and apply the same to the society.

CO-5. Apply the concept of Olympics in organizing various sports activities.

PAPRE-2 CC-102 ANATOMY

Course Outcomes

After completing this course, the students will be able to

CO-1. Understand the different systems of human body.

CO-2. Identify and describe the different organs of the human body and its regulation.

CO-3. Understand the effects of the exercise on different systems of human body.

CO-4. Measure the bodily functions such as blood pressure, pulse/heart rate, different lung volume, gaseousexchange, capacity, amount of lactic acid etc.

PAPRE 3 CC-103 HEALTH EDUCATION AND ENVIRONMENTAL STUDIES

Course Outcomes

After completing this course, the students will be able to

CO-1. Understand about the concept of health and health education.

CO-2. Understand the health problems in India.

CO-3. Understand about hygiene, nutritional aspects and prevention and control of communicable and non communicable diseases.

CO-4. Apply the comprehensive knowledge of the concept of health education, school health services and prevention of the environment related problems.

CO-5. Realize the value of environmental science.

PAPRE 4 EC-101 ADAPTIVE PHYSICAL EDUCATION (ELECTIVE)

Course Outcomes

After completing this course, the students will be able to

CO-1. Understand the concept and mechanism of officiating and coaching.

CO-2. Describe the duties of coaches and officials.

CO-3. Know the ethics and philosophy of coaching and officiating.

CO-4. Realize the qualities and qualification of coach and officials.

CO-5. Apply the concept of coaching and officiating.

PAPRE 5 CC-201 YOGA EDUCATION

Course Outcomes

After completing this course, the students will be able to – work

CO-1. Understand the yoga and its historical development.

CO-2. Differentiate between various stages of astanga yoga.

CO-3. Demonstrate different asanas, pranayamas and kriyas.

CO-4. Apply and demonstrate various benefits of yoga to be applied in the field of sports.

CO-5. Relate yoga with health and wellness.

CO-6. Develop yogic programs/schedules.

SEMESTER II

PAPRE 1 CC-202 EDUCATIONAL TECHNOLOGY AND METHODS OF PHYSICAL EDUCATION

Course Outcomes

After completing this course, the students will be able to-work

- CO-1.** Understand the concept of educational technology and methods teaching.
- CO-2.** Describe and use various teaching methods according to suitability.
- CO-3.** Construct the lesson plans for various physical education activities.
- CO-4.** Classify the types of presentation, techniques and technical preparations required for physical education lessons.
- CO-5.** Understand the principal of class management and factors affecting class management.

PAPRE 2 CC-203 PHYSIOLOGY

Course Outcomes

- CO-1.** Describe and apply the fundamental and advanced concepts of exercise physiology.
- CO-2.** Define and describe the term exercise physiology
- CO-3.** Recognize the energy system for aerobic and anaerobic components of exercise.
- CO-4.** Summarize the underlying physiological basis of physical fitness, physical training, health and wellness.
- CO-5.** Discover the nutritional aspect of fitness and performance.
- CO-6.** Comprehend the physiological changes and adaptations during exercise in different environmental conditions

PAPRE 3 EC-201 COMPUTER APPLICATIONS IN PHYSICAL EDUCATION

Course Outcomes

- CO-1.** Correlate the of ICT& Education Technology in Physical Education and Sports concepts with the sports and athlete specific situations
- CO-2.** Integrate the knowledge about Communication Process and Teaching for learner.
- CO-3.** List down the Information Technology utilized in the field of sports.
- CO-4.** Analyze the issues related to Internet, Networking, E-learning and Cyber Security.

PAPRE 4 EC-202 SPORTS NUTRITION AND WEIGHT MANAGEMENT (ELECTIVE)

Course Outcomes

- CO-1.** Understand the concept of holistic health through fitness and wellness
- CO-2.** Explain the concept of physical fitness, health related and motor fitness
- CO-3.** Evaluate primary health status
- CO-4.** Prepare fitness schedules & evaluate fitness

PAPRE 5 CC-301 PRINCIPLES OF SPORTS TRAINING

Course Outcomes

After completing this course, the students will be able to – work

- CO-1.** Understand the modern concept of sports training.
- CO-2.** Describe the principles of sports training.
- CO-3.** Evaluate and Develop system of sports training – basic performance, intermediate performance and high-performance training.
- CO-4.** Plan training sessions.
- CO-5.** Realise and apply the Methods of Technique Training.

SEMESTER III

PAPRE 1 CC-302 SPORTS MANAGEMENT

Course Outcomes

CO-1. To describe organization and administration of sports programmes.

CO-2. To analyze and interpret sports philosophy, sports sociology, business systems, sports management, public administration and marketing techniques.

CO-3. To develop opportunities to construct & design the curriculum of PE in broader aspects realizing the age group, gender consideration and physiological basis

PAPRE 2 CC-303 SPORTS PSYCHOLOGY AND SOCIOLOGY

Course Outcomes

CO-1. Correlate the psychological concepts with the sports and athlete specific situations

CO-2. Integrate the knowledge about personality, motor learning for behavior modification of athletes

CO-3. Relate different theories of motor learning with its influence on motor perception and related cognitive abilities of athletes.

CO-4. List down the strategies for motivation utilized in the field of sports.

CO-5. Analyze the issues related to social behavior based on physiological structure and function

PAPRE 3 EC-301 SPORTS MEDICINE, PHYSIOTHERAPY AND REHABILITATION (ELECTIVE)

Course Outcomes

CO-1. To apprise the students about the introduction to Athletic Care & Rehabilitation

CO-2. To synthesize the basic concept of sports injury and rehabilitation.

CO-3. To appraise the varied therapeutic aspects of exercise.

CO-4. To appraise the understanding of the preventive and curative aspects of sports injuries.

CO-5. To explain the understanding of the rehabilitation aspects of sports injuries

M.P.ED.

PROGRAMME OBJECTIVES

PO-1. Holistic approach: The programme gives an insight into the holistic concept of the Subject.

PO-2. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO-3. Effective Citizenship: Demonstrate social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-4. Ethics: Recognize different value and moral systems and correlate them with present system.

PO-5. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).

PROGRAMME SPECIFIC OUTCOMES

Develops specialized knowledge in skills of games.

PSO-1. Development of knowledge in health.

PSO-2. Develops effective communication in Physical education.

PSO-3. Able to develop exercise.

PSO-4. Preparation for competitive examination other than physical education.

PSO-5. Develops specialized knowledge in skills of games.



हिंदी एवं भाषा विज्ञान विभाग

रानी दुर्गावती विश्वविद्यालय, जबलपुर म.प्र

एम.ए. हिंदी पाठ्यक्रम

हिंदी साहित्य में स्नातकोत्तर पाठ्यक्रम के उद्देश्य

हिंदी साहित्य में स्नातकोत्तर पाठ्यक्रम कार्यक्रम का उद्देश्य है—

ज्ञान के विविध आयामों का स्पष्टीकरण, परिपक्व मस्तिष्क का निर्माण, कौशल विकास, वृहद् दृष्टिकोण, अध्ययन के द्वारा प्राप्त तथा अर्जित जीवन मूल्यों का अपने जीवन तथा व्यवहार में सम्मिश्रण, व्यक्तित्व का संपूर्ण विकास एवं समाज तथा राष्ट्रोपयोगी नागरिक तैयार करना है, जिन्हें निम्नांकित बिंदुओं में और अधिक स्पष्ट किया जा सकता है—

- विद्यार्थियों को संवेदनशील नागरिक बनाना।
- एक कुशल वक्ता तथा आकर्षक स्वावलंबी व्यक्तित्व का निर्माण करना।
- समाज और समुदाय के प्रति संवेदनशील दृष्टि का विकास करना।
- राष्ट्रीय चेतना का विकास करना।
- मानवीय मूल्यों के प्रति स्वस्थ दृष्टिकोण विकसित करना।
- साहित्य में राष्ट्र और राष्ट्रवाद के सही अर्थों को बताना।

कार्यक्रम अधिगम परिणाम

हिंदी साहित्य में स्नातकोत्तर उपाधि से संबद्ध अधिगम परिणाम इस प्रकार है—

PSO-1. साहित्य संप्रेषण के आधार बिंदुओं की जानकारी देना ताकि साहित्य के संबंध में एक स्पष्ट समझ विकसित हो सके।

PSO-2. हिंदी साहित्य और भाषा का व्यवस्थित और तर्कसंगत ज्ञान कराना ताकि उसके सैद्धांतिक पक्ष और साहित्यिक विकास के संबंध में पर्याप्त जानकारी मिल सके।

PSO-3. साहित्य की विभिन्न विधाओं को पढ़ने और समझने की योग्यता का विकास करना।

PSO-4. साहित्य लेखन की विविध शैली और समीक्षात्मक दृष्टि का विकास करना।

प्रथम सेमेस्टर

प्रथम प्रश्नपत्र . हिंदी साहित्य का इतिहास उद्देश्य

CO. हिंदी साहित्य का इतिहास पूर्व काल की विभिन्न परिस्थितियों का षाषत् दस्तावेज है। जिससे तत्कालीन सामाजिक, सांस्कृतिक, राजनीतिक स्थिति की जानकारी प्राप्त होती है। समय और विभिन्न कालों के अनुसार साहित्य की विभिन्न प्रवृत्तियों में होने वाले परिवर्तन का अध्ययन किया जा सकता है। इस प्रश्नपत्र में साहित्य के साथ तत्कालीन समाज का अध्ययन अपेक्षित है।

प्रश्नपत्र द्वितीय प्राचीन एवं मध्यकालीन काव्य उद्देश्य

CO. प्राचीन एवं मध्यकालीन कवियों ने आदिकाल और भक्तिकाल दोनों में षौर्य, श्रृंगार एवं भक्ति का सुंदर समन्वय तो हुआ है, साथ ही निर्गुण भक्तिधारा को आगे बढ़ाने एवं सूफी प्रेम की पीर को हर छात्र को समझाया है। रासों काव्य की भी अपनी विषिष्टता है।

प्रश्नपत्र तृतीय हिंदी भाषा का व्याकरण उद्देश्य

CO. हिंदी भाषा के उद्भव और विकास के साथ भारत में व्याकरण का विकास एवं प्रमुख व्याकरणाचार्यों का परिचय देते हुए, हिंदी में शब्द निर्माण करने के लिए व्याकरण आदि को समझना आवश्यक है।

निर्धारित पाठ्यक्रम चतुर्थ प्रश्नपत्र अनुवाद विज्ञान उद्देश्य

CO. हिंदी को रोजगारपरक बनाने के लिए कंप्यूटर प्रोग्रामिंग की जानकारी देने के साथ अनुवाद के सिद्धांत एवं व्यवहार कला का ज्ञान प्रदान करना है।

द्वितीय सेमेस्टर

प्रथम प्रश्नपत्र . हिंदी साहित्य का इतिहास (आधुनिक काल) उद्देश्य

CO. गद्य एवं गद्य की प्रमुख विधाओं का विकास आधुनिक काल अर्थात् 19वीं शताब्दी में हुआ। आधुनिक काल की राजनीतिक, सामाजिक परिस्थितियों का अध्ययन। आधुनिक काव्य की विभिन्न प्रवृत्तियों का अध्ययन।

द्वितीय प्रश्नपत्र . हिंदी उपन्यास एवं लघु कथा साहित्य CO.

उद्देश्य

CO. हिंदी उपन्यास, उपन्यासकारों की रचनाओं की विशेषताएँ। लघु कथा की विशेषताएँ और लघु कथाकारों का परिचय कराना प्रमुख उद्देश्य है।

तृतीय प्रश्नपत्र . भारतीय एवं पाश्चात्य साहित्यशास्त्र उद्देश्य

CO. साहित्य को तैयार करने में या लिखने में कौन कौन से नियम और सिद्धांत का प्रयोग किया जाना चाहिए इसकी समझ पैदा करना और सीखना ताकी छात्र स्वयं भी लेखन की ओर प्रवृत्त हो तो उसे भारतीय साहित्य शास्त्र के अलावा पाश्चात्य सिद्धांत का ज्ञान हो।

चतुर्थ प्रश्नपत्र . हिंदी की उत्पत्ति, विकास और संरचना उद्देश्य

CO. हिंदी भाषा के आधुनिकीकरण एवं मानकीकरण की जानकारी के साथ उसके व्याकरण को समझना अति आवश्यक है विशेषकर व्याकरणिक कोटियों को जानना और उसके अनुसार शुद्ध वाक्य की संरचना करना। हिंदी भाषा की लिपि देवनागरी का ज्ञान, साथ ही तकनीकी की मांग के आधार पर हिंदी में कंप्यूटर प्रणाली का ज्ञान, और केंद्र शासन एवं राज्य शासन के कार्यालयों के लिए रोजगारोन्मुखी राजभाषा संबंधी ज्ञान प्रदान करना।

तृतीय सेमेस्टर

प्रथम प्रश्नपत्र – आधुनिक हिंदी कवि और उनके काव्य (छायावादी काव्य)

उद्देश्य

CO. आधुनिक काल के प्रारंभिक चरण अर्थात् भारतेन्दु युग से द्विवेदी एवं छायावादी युग की कविता की प्रवृत्तियाँ, प्रमुख कवि और युगीन सामाजिक, आर्थिक व राजनीतिक परिस्थितियों की जानकारी देकर कविता को युगीन संदर्भों से जोड़कर अध्ययन कराना।

द्वितीय प्रश्नपत्र– भाषाविज्ञान उद्देश्य

CO. हिंदी की लिपि देवनागरी है उसके प्रयोग के लिए जिसकी व्यवस्था अर्थात् स्वन, रूप, वाक्य, अर्थ और प्रोक्ति को समझना आवश्यक है। भाषाविज्ञान के ये अंग कहलाते हैं इनके ज्ञान से ही भाषा एवं उसकी व्यवस्था का सम्यक् ज्ञान दिलाया जा सकता।

तृतीय प्रश्नपत्र– नाटक, निबंध और एकांकी

उद्देश्य

CO. भरत मुनि की नाट्य परंपरा, आधुनिक युग तक आते हुए कई पड़ावों को पार कर नए परिवेश और समाज के साथ जुड़ते हुए दृश्य माध्यम तक रंगमंच पर प्रदर्शित किया जाने लगा। इस प्रश्नपत्र के माध्यम से विद्यार्थियों को उस अतीत के आदर्श का परिज्ञान कराना तथा वर्तमान को समृद्ध बनाने की प्रेरणा देना पाठ्यक्रम का उद्देश्य है।

चतुर्थ प्रश्नपत्र— लोक साहित्य उद्देश्य

CO. लोक संस्कृति का इतिहास, परंपरा बताते हुए लोक संस्कृति से राष्ट्रवाद का ज्ञान कराना। लोक साहित्य का अन्य सामाजिक विज्ञानों के बीच संबंध बताना तथा रंगमंच पर लोक नाट्यों के प्रभाव का अध्ययन कराना।

चतुर्थ सेमेस्टर प्रथम

प्रश्नपत्र—उत्तर छायावाद का इतिहास और काव्य

उद्देश्य

CO. प्रयोगवाद के पुरोधा अज्ञेय ने कविता को ही कवि का परम वक्तव्य माना है। 'तारसप्तक' के संपादक अज्ञेय को पाठ्यक्रम में रखने का उद्देश्य न सिर्फ उनकी कविताओं का बल्कि उस युग चेतना को समझाना। फैंटेसी पैली के साथ हालावाद, प्रगतिवाद, नई कविता, अकविता तथा जनवादी कविता और उनके रचना शिल्प को समझाना प्रमुख उद्देश्य है।

द्वितीय प्रश्नपत्र—पत्रकारिता उद्देश्य

CO. हिंदी को रोजगारपरक बनाने के लिए पत्रकारिता और जनसंचार के अंतर्गत संपादन कला और इसके विविध आधारभूत प्रकारों का वैज्ञानिक प्रशिक्षण देना।

तृतीय प्रश्नपत्र —वर्तमान विमर्ष और हिंदी साहित्य उद्देश्य

CO. वर्तमान साहित्य में चल रहे विमर्ष का ज्ञान कराना, साहित्यकारों के पत्रों की जानकारी पत्र साहित्य और डायरी विधा के साथ रेखाचित्र संस्मरण को समझना व उसके लिए प्रेरित करना ही इसका उद्देश्य है।



Department of PG Studies and Research in History

Programme Offered

1. M.A. (History)

PROGRAMME OUTCOMES:

The objective of this paper is to inculcate in the researchers, the positivist Indian thought and also learn from the life and works of great Indian souls. Thus, in this paper the student's study would begin from the Vedic Upnishadic thoughts to the Gita, then the six schools of Indian Philosophy; Buddhism, Jainism, Manu and Kautilya. They would learn about Bhakti Saints and thought. Also, Sufism and Sufi Saints. The study of modern Indian thought would include the renaissance reformers, and the freedom fighters. This would be a comprehensive study work In which the ideas of most of modern day thinkers including Pt. Dindayal Upadhyaya and Dr APJ Abdul Kalam would be studied

PROGRAMME OBJECTIVES

- PO-1. Critical Thinking:** Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication:** Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction:** Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship:** Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics:** Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability:** To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning:** It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMME SPECIFIC OUTCOMES:

While doing PhD the researchers encounter so many problems. The basic aim of this paper is to acquaint them all the methodology of writing research papers, dissertations and of course, thesis. They would come to know all the finer aspects of research work such as differentiating primary and secondary data and to retrieve and

utilize it.

SEMESTER I

PAPER 1 HISTORIOGRAPHY, CONCEPT, METHOD AND TOOLS, HSC101

Course Outcomes

The whole study of this paper would establish the student's strong command over the discipline history, would lay a firm foundation for doing research in future and make his writings more mature and objective.

PAPER 2 INDIAN HISTORY

Course Outcomes

CO-1. On learning the views of different schools of thought on history, the students may make their own appreciation for the good points for all of them.

CO-2. The students will also learn how India was functioning viably at the time of British advent.

CO-3. Then how the British took advantage of disunity among us and gradually nibbled whole of India.

CO-4. However, the students would also know about polity, constitutional development and the diplomacy, the British gave to us Indians.

PAPER 3 20TH CENTURY WORLD HSC

Course Outcomes

CO-1. From this paper the students would get aware towards liberalism and democracy.

CO-2. They will also understand how the people of the world fought against dictatorship, imperialism and exploitation, liberated and strengthened their nations

PAPER 4 WORLD HISTORY 18TH AND 19TH CENTURIES)

Course Outcomes

CO-1. On studying this paper, the students will come to know how Europeans began to relinquish blind faith in religion and started thinking and acting reasonably and scientifically.

CO-2. Later how the findings of renaissance led to inventions of machines that caused industrial revolution.

CO-3. Then the ideas of revolutionary France, which are a beacon light to the oppressed classes of the world to date.

CO-4. Then they will learn lessons from the study of rise and fall of Napoleon. Also, how the world powers began to sit on meeting tables and solve their differences, instead of using sword.

CO-5. The students will come to know the growth and the good values of democracy

SEMESTER II

PAPER 1 HISTORIOGRAPHY, CONCEPT, METHOD AND TOOLS

Course Outcomes

CO-1. In this paper the students will get advanced knowledge of historiography which they studied in Semester I.

CO-2. Course content of this paper aims that the history students become objective researchers at the PhD level and later contribute to the existing knowledge of history discipline, when they become academicians

PAPER 2 INDIAN HISTORY (1757-1857 AD),

Course Outcomes

CO-1. The students will learn about the socio-economic policies of British in India and how the country moved towards modernity through the development of railways, Posts and Telegraphs and new urban centers.

CO-2. They will also come to know about the development of education and renaissance. They will also know what lessons the Indians learnt from the first war of independence.

PAPER 3 20TH CENTURY WORLD

Course Outcomes

CO-1. From this paper the students will learn how the differences between communism and capitalism culminated into cold war and associated international tensions.

CO-2. They will also learn how Pt Nehru, Marshal Tito and President Nasser gave able leadership to third world countries in such a scenario.

CO-3. Then the problems in communism, which led to its fall.

CO-4. They will also come to know what the new world order is and how its science and technology is.

PAPER 4 WORLD HISTORY 18TH AND 19TH CENTURIES

Course Outcomes

This paper takes a world view in the referred period. The various nationalist struggles in Europe and America. How capitalism, imperialism and colonialism are interrelated. The students will also know about the resurgence East Asian powers in 18th and 19th centuries.

SEMESTER III

PAPER 1 HISTORY OF MARATHAS 1627-1818 AD

Course Outcomes

This paper teaches about Hindu resurgence against the later decadent Mughals, the resurgence, which was led by the brave Shivaji and Marathas. The beginning of consolidation of Maratha empire under Peshwa Balaji Vishwanath would also be discussed

PAPER 2 HISTORY OF MODERN INDIA 1858-1975

Course Outcomes

This paper will teach the students, the consolidation of British rule and its socio-economic impact upon us. The students will also learn, how India evolved constitutionally.

PAPER 3 WOMEN IN INDIAN HISTORY

Course Outcomes

This paper intends for gender sensitization of all students so that they become more civilized citizens of India. The students will be taught the Liberal, Marxist, Socialist, Radical and Post-Modernist approaches towards the women's studies. They will also know the women's status in ancient, mediaeval and modern India; the work done by ancient learned women, mediaeval saints and modern Indian renaissance leaders. Conditions of tribal women and rights of women in general will also be discussed.

PAPER 4 HISTORICAL APPLICATION IN TOURISM

Course Outcomes

This paper intends to make the student, aware and well informed of the rich cultural heritage of India. Some units of this paper are so designed that if a student wants to join any section of tourism business, he has some background of it in mind.

SEMESTER IV

PAPER 1 HISTORY OF MARATHAS 1627-1818

Course Outcomes

This paper will teach the students, the Maratha history from the period of Peshwa Baji Rao I to the third Anglo Maratha war and the fall of Maratha confederacy in 1818. The students would learn about aspects of feudalism that developed in the Maratha confederacy with the passage of time.

PAPER 2 HISTORY OF MODERN INDIA 1858-1975

Course Outcomes

In this paper the students will learn about the Indian nationalism which emerged in the late 19th century (However it necessary to note here that Indian nationalism was not a by product of the British rule but is as ancient as the Indus Valley civilization and the Aryan Culture). Then the students will learn about the Gandhian movements and the greatness of this Mahatma. The students will also be taught about the contributions of the revolutionaries, including Netaji Subhas Chandra Bose. By making them aware of the communal politics, it is hoped that the students would not fall prey to divisive forces around them. About the post-independence history; land question, industrial policy, women's empowerment and scientific and technological developments will be taught. India's role in liberation and integration of Goa will also be explained.

PAPER 3 WOMEN IN INDIAN HISTORY

Course Outcomes

This paper is continuation of the same titled paper in Semester III. It traces, women's empowerment through ancient, mediaeval and modern times. Also their role in the revolutionary and national movements. Women's cultural achievements will also be discussed.

PAPER 4 HISTORICAL APPLICATION IN TOURISM

Course Outcomes

In this paper the students would learn much about the Indian culture, including the folk culture. Also all the aspects of guiding skills. All this would be much beneficial to them, if they decide to join the tourism business.



Department of Yoga

Programme Offered

1. M.A. (Yoga)

M.A. (Yoga)

PROGRAMME OUTCOMES:

The PG programs in Yoga education aims to achieve a sound grounding in understanding the basic concepts of Yoga with sufficient content of topics from modern and contemporary areas of exciting developments in yoga philosophy to ignite the young minds. The curricula and syllabi designed in such a way that the basic connection between theory and practice and its importance in understanding yogic concept will be apparent to the students. The course is two-year duration spread over four semesters after the under-graduation level course.

PROGRAMME OBJECTIVES

- PO-1. Critical Thinking:** Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication:** Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction:** Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship:** Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics:** Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability:** To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning:** It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMME SPECIFIC OUTCOMES:

- PSO-1.** Promotion of positive awareness for the healthy body and healthy mind.
- PSO-2.** To inculcate the teaching ability for conducting yoga sessions and offer various techniques to promote healthy living.
- PSO-3.** To create yoga professionals of high caliber who know the concepts, techniques and can do the needful for the social wellbeing.
- PSO-4.** To create yoga experts with in-depth knowledge based on yogic texts.

PAPER 1 FUNDAMENTALS OF YOGIC SCIENCE

Course outcomes

On completion of this course, the students will have:

- CO-1.** Critical understanding of the Evolution of Yoga based on the classical texts
- CO-2.** Understanding the basic theories and practices of Shad-Darshan.
- CO-3.** Knowledge of the concepts of Jnana, Bhakti and karma Yoga.
- CO-4.** Understanding of different Schools of Yoga.

PAPER 2 HUMAN CONSCIOUSNESSES AND YOGIC SCIENCE

Course outcomes

Following the completion of this course, students shall be able to

- CO-1.** understand the altered states of consciousness.
- CO-2.** know the science of behavior.
- CO-3.** can understand and develop a complete personality.
- CO-4.** can define various types of cognitive aspects.
- CO-5.** learn the management of common mental disorders.

PAPER 4 SKILL DEVELOPMENT

Course outcomes

- CO-1.** To equip the students with tools and techniques for handling socio political issues that affect them on individual / collective basis.
- CO-2.** Larger awareness of public issues and empathy with marginalised issues in society.
- CO-3.** Inculcate a sense of ethical responsibility and a vision to challenge the existing norms in need of change.

SEMESTER II

PAPER 1 FUNDAMENTALS OF HATHA YOGA

Course outcomes

On completion of this course, the students will have:

- CO-1.** Knowledge of various Traditional Hatha Yoga Texts.
- CO-2.** Understanding of the concept and practice of Shodhana Kriyas with specific principles.
- CO-3.** Conceptual and practical understanding of Asana with its benefits and contra-indications.
- CO-4.** Conceptual and practical understanding of Pranayama with its benefits and contra-indications.
- CO-5.** Conceptual and practical understanding of Mudra and Bandha.

PAPER 2 SCIENCE, SOCIETY AND YOGIC SCIENCE

Course outcomes

- CO-1.** Teach the yoga practices in a scientific interpretation.
- CO-2.** Help to build up a complete personality with physical health, mental well-being.
- CO-3.** Develop understanding of different yogic techniques.

PAPER 4 SKILL DEVELOPMENT

Course outcomes

This course is designed to make students philosophically competent about their own decisions, to achieve clarity, develop comprehension skills and reach precision in arguments with reasons. A spectrum of issues ranging from morality, environment, real life situations, moral dilemmas and ongoing philosophical examination of the crisis in the field of artificial intelligence are a part of this course curriculum.

SEMESTER III

PAPER 1 ANATOMY, PHYSIOLOGY AND HEALTH

Course outcomes

On completion of this course, the students will be able to:

- CO-1.** Understand of Human Anatomy and Physiology.
- CO-2.** Know different levels of structural complexity.
- CO-3.** Know the effect of yogic techniques on different systems in the human body.
- CO-4.** Develop the understanding of hormones.

PAPER 2 YOGA PSYCHOLOGY

Course outcomes

Following the completion of this course, students shall be able to

- CO-1.** understand the altered states of consciousness.
- CO-2.** know the science of behavior.
- CO-3.** can understand and develop a complete personality.
- CO-4.** can define various types of cognitive aspects.
- CO-5.** learn the management of common mental disorders.

SEMESTER IV

PAPER 1 YOGA IN ANCIENT LITERATURE

Course outcomes

Following the completion of this course, students shall be able to

- CO-1.** understand the different techniques of Dhyana practice.
- CO-2.** know the meaning and methods of Pranayama practice.
- CO-3.** understand different limbs of Yoga.
- CO-4.** define various branches of Yoga.
- CO-5.** learn the yogic management of life style to attain perfection in life.

PAPER 2 RESEARCH METHODOLOGY IN YOGIC SCIENCE

Course outcomes

Following the completion of this course, students shall be able to

- CO-1.** Understand the meaning and definition of Research.
- CO-2.** Know the nature and different types of Hypothesis.
- CO-3.** Understand the scientific methods of Observations and Experiments.
- CO-4.** Define nature of Variable and Sampling.



संस्कृत, पालि एवं प्राकृत विभाग

रानी दुर्गावती विश्वविद्यालय, जबलपुर म.प्र

एम.ए. संस्कृत

संस्कृत साहित्य में स्नातकोत्तर पाठ्यक्रम के उद्देश्य

- PO-1. Critical Thinking:** Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication:** Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction:** Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship:** Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics:** Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability:** To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning:** It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

कार्यक्रम अधिगम परिणाम

संस्कृत साहित्य में स्नातकोत्तर उपाधि से संबद्ध अधिगम परिणाम इस प्रकार है—

- PSO-1.** साहित्य संप्रेषण के आधार बिंदुओं की जानकारी देना ताकि साहित्य के संबंध में एक स्पष्ट समझ विकसित हो सके।
- PSO-2.** संस्कृत साहित्य और भाषा का व्यवस्थित और तर्कसंगत ज्ञान कराना ताकि उसके सैद्धांतिक पक्ष और साहित्यिक विकास के संबंध में पर्याप्त जानकारी मिल सके।
- PSO-3.** साहित्य की विभिन्न विधाओं को पढ़ने और समझने की योग्यता का विकास करना।
- PSO-4.** साहित्य लेखन की विविध शैली और समीक्षात्मक दृष्टि का विकास करना।

प्रथम सेमेस्टर

प्रश्नपत्र प्रथम वेद

उद्देश्य –

- CO-1.** इस पाठ्यक्रम का उद्देश्य छात्रों को वैदिक साहित्य का व्यापक परिचय देना है जिससे छात्र प्राचीन भारतीय ज्ञान तथा पूर्वजों की इस महानतम संस्कृति से परिचित हो सकें।
- CO-2.** इस प्रश्नपत्र में कुछ वैदिक देवताओं का विशेष अध्ययन है जो विशेषतः सृष्टि उत्पत्ति विषयक एवं समाज की उन्नति तथा सुधार विषयक है।

CO-3. वैदिक साहित्य का इतिहास हमारी संस्कृति तथा वैदिक वाङ्मय के प्रति छात्रों की रुचि जाग्रत करना है।

प्रश्नपत्र द्वितीय वेदाङ्ग

उद्देश्य –

CO-1. इस पाठ्यक्रम का उद्देश्य छात्रों को ऋग्वेद से लेकर वेदांग, निरुक्त तक वैदिक साहित्य का व्यापक परिचय देना है।

CO-2. इसमें वैदिक देवताओं को जानने तथा परिचय प्राप्त करने हेतु ऋग्वेद के कुछ महत्त्वपूर्ण छंद भी सम्मिलित हैं।

CO-3. निरुक्त के कुछ अंशों के अध्ययन से शब्दों की वैदिक व्युत्पत्ति को समझने में सहायता मिलती है जबकि वैदिक व्याकरण वैदिक भाषा की विशिष्टता की व्याख्या करता है।

प्रश्नपत्र तृतीय पालि, प्राकृत एवं भाषा विज्ञान

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को भाषा शास्त्र और आधुनिक भाषाविज्ञान की कुछ महत्त्वपूर्ण अवधारणाओं और सिद्धान्तों से परिचित कराना है। इन अवधारणाओं और सिद्धान्तों के प्रकाश में संस्कृत भाषा के सिंहावलोकन एवं विश्लेषण में मदद करना है।

प्रश्नपत्र चतुर्थ भारतीय दर्शन

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को भारतीय दर्शन के कुछ महत्त्वपूर्ण मूलभूत सिद्धान्तों के व्यापक और गहन अध्ययन द्वारा सशक्त विचारशक्ति को हासिल करने में सक्षम बनाना है।

प्रश्नपत्र पञ्च भारतीय नीतिशास्त्र (दर्शन विभाग)

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य नीतिशास्त्र के ज्ञान द्वारा छात्रों में नैतिकता का विकास करना है। सत्य, पुरुषार्थ एवं योग के सम्यक ज्ञान द्वारा छात्रों में जीवनोपयोगी कौशल तथा समाजोपयोगी उचित व्यवहार की शिक्षा देना है। समकालीन भारतीय नीतिशास्त्रियों के विशेष नीति-गुणों से परिचित कराना है।

द्वितीय सेमेस्टर

प्रश्नपत्र प्रथम सांख्य एवं मीमांसा

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को भारतीय दर्शन के दो प्रमुख ग्रन्थों सांख्यकारिका एवं अर्थसंग्रह के अध्ययन-अध्यापन से सांख्य एवं मीमांसा की मूलभूत अवधारणाओं तथा सिद्धान्तों से परिचित कराना है।

प्रश्नपत्र द्वितीय काव्यशास्त्र

उद्देश्य –

CO. मम्मट का काव्यप्रकाश संस्कृत साहित्य में काव्यशास्त्रीय ग्रन्थ है जिसमें काव्य लक्षण, रस, ध्वनि, गुण-दोष, रीति और अलंकार की वैचारिक चर्चा पर एक संतुलित दृष्टिकोण प्राप्त होता है। इस पाठ्यक्रम का उद्देश्य शिक्षार्थियों को काव्यप्रकाश के माध्यम से काव्य के विभिन्न आयामों अर्थात् प्रयोजन, लक्षण और काव्यभेदों का परिचय प्राप्त कराना है।

प्रश्नपत्र तृतीय भारतीय संस्कृति एवं पर्यावरण

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को संस्कृत साहित्य में संरक्षित भारतीय संस्कृति के ज्ञान से परिचित कराना है। वैदिक तथा लौकिक संस्कृति के महत्त्व से छात्रों अवगत होंगे। पर्यावरण के अध्ययन से छात्रों में पर्यावरण के प्रति चेतना को जाग्रत करना तथा पर्यावरण संरक्षण के प्रति जागरुकता उत्पन्न करना। प्राचीन भारतीय संस्कृति में

धर्म के अर्थ एवं वैशिष्ट्य से परिचित कराना।

प्रश्नपत्र चतुर्थ काव्य (मेघदूत एवं कुमारसंभव)

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य कालिदास की विशिष्ट रचनाओं के सौन्दर्य से छात्रों को अवगत कराना है। कालिदास की कालजयी रचनाओं के भाषा-शिल्प, अलंकारों तथा उपमा प्रयोग के वैशिष्ट्य से छात्रों को परिचित कराना है।

प्रश्नपत्र पञ्चांश काव्य (कर्पूरमंजरी एवं विद्धशालभंजिका)

उद्देश्य –

CO. महाकवि राजशेखर की प्राकृत भाषा में निबद्ध दो अनुपम कृतियों के साहित्यिक सौन्दर्य से छात्रों को परिचित कराना एवं रचनाओं में चित्रित तात्कालिक सामाजिक एवं राजनीतिक परिस्थितियों से परिचित कराना।

तृतीय सेमेस्टर

प्रश्नपत्र प्रथम महाकाव्य

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य पद्य काव्य विधाओं में सर्वाधिक महत्त्वपूर्ण एवं महाकवियों द्वारा सर्वाधिक प्रयुक्त काव्यविधा महाकाव्य से परिचित कराना तथा बृहत्त्रयी एवं लघुत्रयी में परिगणित महाकवि माघ एवं कालिदास कृत रचनाओं में क्रमशः प्रौढ़ी एवं समासोक्ति जन्य काव्य सौन्दर्य को प्रस्फुटित करना है।

प्रश्नपत्र द्वितीय नाट्यशास्त्र

उद्देश्य –

CO. पाठ्यक्रम का उद्देश्य विद्यार्थियों को नाट्यशास्त्रीय कथानक, अभिनेता, रस जैसे विभिन्न नाट्य तत्त्वों से परिचित कराना है। नाट्य के विभिन्न भेदों से परिचित कराते हुये नाट्य संरचना में छात्रों को सक्षम बनाना है।

प्रश्नपत्र तृतीय संस्कृत वाज्मय एवं आधुनिक विश्व

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य प्राचीन भारतीय धर्मशास्त्रों से परिचित कराना है, तथा धर्म के प्रमुख आधार-स्तंभ स्मृतियों से अवगत कराना है।

प्रश्नपत्र चतुर्थ साहित्यशास्त्र (काव्यालंकार एवं काव्यप्रकाश)

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य भारतीय काव्यशास्त्र के आचार्य मम्मट द्वारा विरचित काव्यप्रकाश के संपूर्ण अध्यापन द्वारा छात्रों में काव्यशास्त्रीय प्रतिभा का विकास करना है जिससे वह भी उत्तम काव्य रचना में सक्षम हो सकें। साथ ही भामह जैसे अलंकारशास्त्री के ग्रन्थ के अध्ययन द्वारा भी काव्य में अलंकार तत्त्वों की उपयोगिता तथा अनिवार्यता से अवगत कराना है। छात्रों में विभिन्न प्रकार के काव्य-दोष, काव्यगुण और काव्य अलंकारों के ज्ञान से परिपुष्ट करना भी इस पाठ्यक्रम का प्रमुख उद्देश्य है।

प्रश्नपत्र पञ्चांश साहित्यशास्त्र

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य भारतीय काव्यशास्त्र के विविध आयामों एवं मार्गों के प्रणेता महाकवि दण्डी तथा महाकवि राजशेखर के काव्यशास्त्रीय चिंतन से अवगत कराना है।

चतुर्थ सेमेस्टर

प्रश्नपत्र प्रथम रूपक

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को महत्त्वपूर्ण साहित्यिक रचनाओं के अध्ययन के माध्यम से संस्कृत साहित्य की समृद्ध परंपराओं से अवगत कराना।

प्रश्नपत्र द्वितीय गद्य, पद्य तथा चम्पू

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य श्रव्य काव्य की समस्त विधाओं को सांगोपांग बोध कराना एवं प्रतिनिधि ग्रन्थों से अवगत कराना है।

प्रश्नपत्र तृतीय व्याकरण, अनुवाद एवं निबन्ध

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को संस्कृत निबन्ध लेखन और अन्य भाषाओं से संस्कृत में अनुवाद की कला में प्रशिक्षित करना है। लघुसिद्धान्तकौमुदी के पाठ से व्याकरण के कुछ अनुप्रयुक्त भागों को भी छात्रों में संस्कृत भाषा के कौशल को विकसित करने के उद्देश्य से पढ़ाया जायेगा जो संस्कृत भाषा में अच्छा निबन्ध लिखने और अनुवाद करने की क्षमता को बढ़ायेगा।

प्रश्नपत्र चतुर्थ विशेषकवि (कालिदास)

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य कालिदास की विभिन्न कृतियों के सौन्दर्य तथा चारुता से अवगत कराना है जिससे छात्रों में संस्कृतसाहित्य के प्रति रुचि जाग्रत हो।

प्रश्नपत्र षष्ठ विशेषकवि (भवभूति)

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य नाट्य शास्त्रीय लक्षणों से इतर दृश्य काव्य के प्रयोग पर बल देना है। नाट्य शास्त्र से इतर होने पर भी रसान्वित दृश्य काव्य पर बल देना है तथा नवीन कवि कल्पनाओं को उकेरना है।



Department of PG Studies and Research in Economics

Programme Offered

1. M. A. (Economics)

MA Economics

PROGRAMME OUTCOMES :

The Master of Arts programme in Economics has been designed with the objective to develop in-depth knowledge of students in frontier areas of economic theory and methods, so that they are able to use the knowledge to study real world economic problems. The course has a strong focus on theoretical and quantitative skills and train students in the collection and analysis of the data using their software skills. The programme offers specialized optional courses, which allow student to pursue their studies in their area of interest. The students are required to submit report and present their findings of field-study. Besides, to hone the student's writing and analytical skills they are required to submit a term paper on current economic problem. Thus, the Masters in Economics programme seek to:

- PO-1. Critical Thinking:** Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication:** Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction:** Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship:** Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics:** Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability:** To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning:** It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMME SPECIFIC OUTCOMES:

- PSO-1.** To impart in depth knowledge to students about economic theory regarding utilization and allocation of resources including labour, natural resources and capital.
- PSO-2.** To develop students understanding about how market for goods and services function and how income is generated and distributed.
- PSO-3.** To give students in depth knowledge into special fields of choice like agricultural economics, industrial economics, financial market, development economics, international trade, urban economics econometrics, mathematical economics etc.
- PSO-4.** To make students familiar with economic theories and their relevance, econometrics,

quantitative techniques and applied research in a wide variety of fields within economics.

SEMESTER I

PAPER 1 MICRO ECONOMIC ANALYSIS

Course outcomes

CO-1. After completing this paper student will be able to understand Introduction and Basic Concepts Demand Analysis, Theory of Production and Costs Production function, Price and Output Determination, Alternative Theories of the Firm, Welfare Economics, General Equilibrium, Economics of Uncertainty and to analyse the issues in individual decision-making units in economics.

PAPER 2 MACRO ECONOMIC ANALYSIS

Course outcomes

CO. The paper entitled “Macro Economic Analysis” equips the students at the postgraduate level to understand systemic facts and latest theoretical developments for empirical analysis.

PAPER 3 QUANTITATIVE METHODS

Course outcomes

CO. The paper also deals with simple tools and techniques, which will help a student in data collection, presentation, analysis and drawing inferences about various statistical hypotheses.

PAPER 4 PUBLIC ECONOMICS

Course outcomes

CO. This paper combines a thorough understanding of fiscal institutions with a careful analysis of the issues which underline budgetary policies in general and Indian experience in particular.

PAPER 5 INDIAN ECONOMIC POLICY

Course outcomes

CO. The emphasis of the paper is on overall social, political and economic environment influencing policy decisions. To develop all these themes, the course is divided into specific modules.

PAPER 6 ECONOMICS OF GROWTH AND DEVELOPMENT

Course outcomes

CO-1. Modules incorporated in this paper are devoted to the theories of growth and development, social and institutional aspects of development, importance of agriculture, and the rationale and pattern of industrialization in developing countries.

CO-2. The other important issues in the context of development such as infrastructure-linkages, role of international trade, importance of domestic macroeconomic policies, investment criteria, and relevance of planning have been included in the modules of this paper.

PAPER 7 INTERNATIONAL TRADE AND FINANCE

Course outcomes

CO. The study of the paper under the present era of globalization will train the students about the likely consequences on income, employment and social standards and possible policy solutions as the world will move into the 21st century.

PAPER 8 INDUSTRIAL ECONOMICS

Course outcomes

CO. This course intends to provide knowledge to the students on the basic issues such as productivity, efficiency, capacity utilization and debates involved in the industrial development in India.

PAPER 9 LABOUR ECONOMICS

Course outcomes

CO. This Paper exposes students to theoretical as well as empirical issues relating to the labour market with special reference to India.

PAPER 10 MATHEMATICAL ECONOMICS

Course outcomes

CO-1. This course is designed to equip students to understand the economic concepts and theories which use mathematical tools and techniques to refine the verbal logic.

CO-2. The use of calculus has permitted formulation of economic problems in multivariable mode and yield valuable insight about optimizing human behaviour.

CO-3. Modern algebraic tools allow convenient handling of simultaneous equations in the context of linear programming, game theory and input-output analysis.

PAPER 11 ECONOMETRICS

Course outcomes

CO. This paper accordingly is devoted to equip the students with basic theory of econometrics and relevant applications of the methods. The topics covered in the course include various problems faced in estimation of both single equations and simultaneous equations models.

PAPER 12 DEMOGRAPHY

Course outcomes

CO. The paper exposes the students to sources of population and related characteristics as also to the rationale, need and evolution of population policy.

PAPER 13 AGRICULTURAL ECONOMICS

Course outcomes

CO. The paper exposes the student's understanding about Agriculture and Economic Development, Diversification of Rural Economic Activities, Agricultural Production and Productivity, Land Reforms and Land Policy, Rural Labour Market Rural labour, Rural Finance, Agricultural Prices, Agricultural Growth

in India, Agriculture and External Sector.

PAPER 14 ECONOMICS OF GENDER AND DEVELOPMENT

Course outcomes

CO. The modules incorporated in this course provide an analysis of issues at the theoretical level and also with regard to specificity of issues prevailing in the Indian context.

PAPER 15 FINANCIAL INSTITUTIONS AND MARKETS

Course outcomes

CO. The modules incorporated in this course. therefore, essential that the student of economics should be well conversant with the theory and practice of different financial institutions and markets to understand and analyse the interconnection between the monetary forces and real forces, their developmental role and limitations in shaping and influencing the monetary and related policies both at the national and international levels.

PAPER 16 ECONOMICS OF INFRASTRUCTURE

Course outcomes

CO. The contents of the paper ‘Economics of Infrastructure’ exposes the student wholly to issues involved indevelopment of infrastructure in developing countries like India.

PAPER 17 COMPUTER APPLICATION IN ECONOMIC ANALYSIS

Course outcomes

CO. The contents of the paper “Computer Application In Economic Analysis” therefore, exposes the future economists must be equipped with skills and tools based on computers, which this course shall provide to them. This will not only enhance their employability but also prepare them for the challenges of the future.

PAPER 18 ECONOMICS AND LAW

Course outcomes

CO. In order to meet this requirement, this course is essential and has been designed in a way that the students of economics would be able to comprehend the basic economic issues affecting the economy along with the related legal provisions. This would enable the economists to frame their models that are closer to reality, besides making them understand the consequences of legal rules, primarily as an exercise in applied microeconomics, macroeconomics, industrial and international economics.

PAPER 19 HISTORY OF MODERN ECONOMIC ANALYSIS (Contribution of Nobel Laureates in Economics)

Course outcomes

CO. The paper “History of Modern Economic Analysis” is an attempt to make the student of economics acquainted with the ideas and works of economists and thinkers who received Nobel Memorial Prize in Economics. The development of ideas by the Nobel Laureates in Economics is breathtaking and covers almost all areas of economic analysis, a relatively new branch.

PAPER 20 WELFARE ECONOMICS

Course outcomes

CO. In order to meet this requirement, this course is essential and has been designed in a way that the students of economics would be able to comprehend the basic economic issues affecting the economy along with the related welfare aspects.

PAPER 21 ECONOMICS OF INSURANCE

Course outcomes

CO. This course on Insurance Economics attempts to give a fairly comprehensive view of the subject to the postgraduate students in Economics and pave the way for possible future expansion of the teaching of an important branch of economics.

PAPER 22 ECONOMICS OF SOCIAL SECTOR AND ENVIRONMENT

Course outcomes

CO. Modules incorporated in this paper are devoted to issues of environmental economics, environmental and social services and the problem of valuation of these services, and designing of instruments and institutions for the management of environment. The models of optimal use of natural resources, macroeconomic issues, sustainable development, environmental resource problems in India and the economics of health and education constitute the other areas of the modules of this paper.



Department of PG Studies and Research in Geography

Programme Offered

1. MA (Geography)

PROGRAMME OUTCOMES:

Program learning outcomes (POs) are specific types of knowledge and skills that students are expected to acquire in the program and to be able to demonstrate upon completion. The Department expects that students who major in geography will be skilled in disciplinary theories, methodologies, and content. These expectations ground the following learning goals and objectives for undergraduate and graduate majors.

PROGRAMME OBJECTIVES

- PO-1. Critical Thinking:** Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication:** Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction:** Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship:** Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics:** Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability:** To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning:** It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMME SPECIFIC OUTCOMES:

- PSO-1.** Establish the position of Geography as a subject and its importance and interrelationships that reiterate and validate the Man Environment relationship.
- PSO-2.** In the course of field surveys, students acquire a greater understanding of the socio-economic and cultural dimensions of the populations with greater focus on marginalized section of society.
- PSO-3.** Physical field surveys enable the students to understand the landforms, geomorphic process and associated hazards.
- PSO-4.** Provide training to students in handling modern instruments and methods like Aerial Photographs, Satellite Imagery, Total Station and Meteorological instruments.

M.A. (Geography) SEMESTER I

PAPER 1 GEOMORPHOLOGY

Course outcomes

CO. Gain in depth knowledge on the influence of various types of Rocks on the development and evolution of land forms, hydroponic characteristics of an open channel flow- the open channel flow then produce erosional and depositional land forms: form process Instruction in the land form development,

PAPER 2 ECONOMIC GEOGRAPHY

Course outcomes

- CO-1.** Acquire knowledge of the fundamental and Modern issues in Economic Geography.
- CO-2.** Develop knowledge on Geographical aspects of economy.

PAPER 3 GEOGRAPHY OF INDIA: PHYSICAL & RESOURCES

Course outcomes

- CO-1.** Understand about the physiographic division of India.
- CO-2.** Understand the climatic variation in India and climatic Region of India.

PAPER 4 HISTORY OF GEOGRAPHICAL THOUGHT

Course outcomes

- CO.** Acquire basic concepts in geographical thought ancient, Recent trends and explanation in Geography.

SEMESTER II

PAPER 1 CLIMATOLOGY

Course outcomes

- CO.** Acquire clear concepts of climatology. Greater understanding of the nature and scope of climatology. Ocean atmospheric interaction, climate and its impact.

PAPER 2 RESOURCE GEOGRAPHY

Course outcomes

- CO.** Student would be able to develop awareness towards judicious use of Resources and their conservation. Student will critically think about sustainable development and how it will solve the problem of depletion of resources and global ecological crises

PAPER 3 GEOGRAPHY OF INDIA: ECONOMY AND REGIONS

Course outcomes

- CO.** Students will get an Introduction to the main uniqueness and similarities. Student will be exposed to social and physical characteristics of India. I I of the Indian regions of both their to historical, economic, cultural, regions

PAPER 4 GEOGRAPHY OF ENVIRONMENT

Course outcomes

CO. Students will Acquire an understanding of and appreciation for the relationship between Geography and environment student Will have general understanding human impacts on the Environment.

SEMESTER III

PAPER 1 OCEANOGRAPHY

Course outcomes

CO. Ability to analyze sea surface temperature fluctuation and its impact on Southern oscillation.

PAPER 2 URBAN GEOGRAPHY

Course outcomes

CO. Develop the practical concepts of urban geography related to spatial analysis of geographical datamorphology ofUrban area'

PAPER 2 URBAN GEOGRAPHY

Course outcomes

CO. Develop the practical concepts of urban geography related fo snatial analysis of geographical datamorphology ofUrban area.

PAPER 3 GEOGRAPHY OF TOURISRN

Course outcomes

CO. Will be able to evaluate the human and cultural geographic resource and classes of tourism.

PAPER 4 COMPULSORY

Course outcomes

CO. Understand about the agriculture, nature, scope, significance and development of agriculture geography, study approaches appliedin agriculture.

SEMESTER IV

PAPER 1 RESEARCH METHODOLOGY IN GEOGRAPHY

Course outcomes

CO. Demonstrate the ability to choose methods appropriate to Research aims and objective. understand the limitations of particular Research methods.

PAPER 2 GEOGRAPHY OF POPULATION

Course outcomes

CO. Acquire clear concepts of population Geography and demographic studies Assessment of vital statistics of population data.

PAPER 3 REGIONAL PLANNING & DEVELOPMENT

Course outcomes

CO. Delineation of formal and functional regions Identify the best measures of inequality and various indicators of Regional development.

PAPER 3 BIOGEOGRAPHY

Course outcomes

CO. This course will provide to student an advanced knowledge on Biodiversity and spatial patterns of biological diversity and understand critically human impacts on species.



Department of communication Studies and Research

Programme Offered

- 1. B.A. (Hons) Mass Communication**
- 2. B.J.C.**
- 3. M.A. (Journalism)**
- 4. M.J.C.**

B.A. (HONS) IN MASS COMMUNICATION

PROGRAMME OUTCOMES:

The overall objectives of the Mass communication & Journalism are:

- PO-1.** Graduates should be able to do creative research and develop new technologies in the field of concern programme, which can contribute to the industry and to academia.
- PO-2.** Graduates should be able to practice concern programme in a responsible, professional and ethical manner and implement eco-friendly sustainable technologies for the benefit of industry as well as society.
- PO-3.** Graduates obtain position in successful career in industry, research institutions, academic, government organizations and entrepreneurship.
- PO-4.** Graduates to be professionally competent in concern programme to solve the problems in environmental, food, biochemical and biomedical engineering.
- PO-5.** Graduate to be able to interact with their peers in industry and society as engineering professionals and leaders to set up technical ambience in the society.

PROGRAMME SPECIFIC OUTCOMES:

The key outcomes planned in this undergraduate programme in Mass communication & Journalism are underpinned as follows:

After completing this undergraduate programme, a learner:

- PSO-1.** Shall acquire fundamental knowledge of Mass communication & Journalism and related study area.
- PSO-2.** Shall acquire the knowledge related to media and its impact.
- PSO-3.** Shall be competent enough to undertake professional job as per demands and requirements of M & EIndustry.
- PSO-4.** Shall empower themselves by communication, professional and life skills.

Course Outcomes

- CO-1. Students would be able to create linguistic skills.
- CO-2. Students would be able to impart knowledge about advanced vocabulary for effective communication.
- CO-3. Students would be able to understand the societal cultural perspectives.
- CO-4. Students would be able to inculcate the knowledge of compositional and comprehension skills.
- CO-5. Students would be able to develop the knowledge of various forms of English literature.

Paper 2: HINDI

Course Outcomes

- CO-1. Students would be able to strengthen oral communication skills in Hindi/ Regional Language.
- CO-2. Student would be able to develop the knowledge of writing in Hindi/ Regional Language.
- CO-3. Students would be able to improve vocabulary in Hindi/ Regional Language.
- CO-4. Students would be able to enrich the knowledge of synonyms, antonyms, idioms and phrases.
- CO-5. Students would be able to inculcate the knowledge of grammar in Hindi/ Regional Language

Paper 3: Introduction to Mass Communication

Course Outcomes

- CO-1. Students would be able to introduce themselves to the theories of Communication.
- CO-2. Students would be able to inculcate the knowledge of Communication models.
- CO-3. Students would be able to develop the knowledge of basic elements of Communication.
- CO-4. Students would be able to acquaint themselves with the various types of Communication.
- CO-5. Students would be able to strengthen the 5Cs of Communication.

Paper 4: History of Media

Course Outcomes

- CO-1. Students would be able to acquaint themselves with the glorious journey of journalism.
- CO-2. Students would be able to enhance understanding of the origin and of the print, electronic and web media.
- CO-3. Students would be able to inculcate the knowledge of growth of print, electronic and web media.
- CO-4. Students would be able to acquaint themselves with technological advancements in print, electronic and web media.
- CO-5. Students would be able to throw light on the present status of various mass media.

Semester: 2

Paper 1: Writing For Mass Media

Course Outcomes

- CO-1. Students know about the basics of news writing.
- CO-2. Students will be having the knowledge of the theory, methods, and practice of gathering information and writing news.
- CO-3. Students would be able to understand different writing techniques.
- CO-4. Students will have the knowledge of web writing.
- CO-5. Students will be having the knowledge of news and background.

Paper 2: Computer Application for Mass Media

Course Outcomes

- CO-1. Students will learn about computer.

CO-2. Students will be able to understand Software and Operating System.

CO-3. Students will have the knowledge of IT Communication.

CO-4. Students will learn about Office Automation Package.

CO-5. Students will learn about Document, creation, manipulation and storage of Chart and Slide Show Package.

Paper 3: ECONOMIC DEVELOPMENT & PLANNING IN INDIA

Course Outcomes

CO-1. Students will be able to identify the back regions problems and write articles concerning the problems.

CO-2. Students will be able to ascertain and understand characteristics of underdevelopment.

CO-3. Students can analyse the rural economy, Budget state and central and manufacturing industries.

CO-4. Students will capable of developing ability to examine the rule of international bodies such as World Bank, IMF,WHO, United Nations, UNESCO, SAARC, G-20, and other importance bodies.

CO-5. Students will be competent to analyse issues of poverty, social justice, SDGs

Paper 4: PUBLIC ADMINISTRATION, SOCIETY AND MEDIA

Course outcome

CO-1. Students will get to know about administration and its composition.

CO-2. Student will learn about freedom of press.

CO-3. Students will get knowledge about public administration in India and their law and orders

Semester 3

Paper 1: REPORTING

Course Outcomes

CO-1. Students would be able to understand the basics of reporting.

CO-2. Students would be able to familiarize themselves with different types of reporting.

CO-3. Students would be able to create understanding of specialized reporting.

CO-4. Students would be able to develop the general understanding of art culture and sports reporting.

CO-5. Students would be able to know about crime reportin

Paper 2: EDITING

Course Outcomes

CO-1. Students would be able to familiarize themselves with the basics of editing.

CO-2. Students would be able to understand the process of editing for various platforms.

CO-3. Students would be able to create understanding of specialized reporting.

CO-4. Students would be able to understand about the dummy, printing and layout.

CO-5. Students would be able to develop the knowledge of photograph

Paper 3: Photo Journalism

Course Outcomes

CO-1. Learner would learn the concepts and importance of photography.

CO-2. Learner would be able to understand photo coverage and photo Journalism.

CO-3. Learner would be to ready to join any media organization as photo Journalist.

CO-4. Learner would know the importance of photo features.

CO-5. Learner would know different branches of photography and may be self-employed.

Paper 4: Indian Government, Politics and International Relations

Course Outcomes

CO-1. Students will be able to have understanding of the world in historical and contemporary context.

CO-2. Students will be having the understanding of the world politics and economics.

CO-3. Students would have the knowledge of writing on global issues.

CO-4. Students would have the knowledge of international developments.

CO-5. Students will know about India's foreign policy.

Semester: 4

Paper 1: Advance Reporting

Course Outcomes

CO-1. Students would be able to understand the basics of advance reporting.

CO-2. Students would be able to familiarize themselves with different types of advance reporting.

CO-3. Students would be able to create understanding of specialized reporting.

CO-4. Students would be able to develop the general understanding of art culture and sports Reporting and rural reporting.

CO-5. Students would be able to know about crime reporting, parliamentary reporting and the coverage

Paper 2: Advance Editing

Course Outcomes

CO-1. Students would be able to familiarize themselves with the basics of advance editing.

CO-2. Students would be able to understand the process of advance editing for various platforms.

CO-3. Students would be able to create understanding of specialized reporting.

CO-4. Students would be able to understand about the dummy, printing and layout.

CO-5. Students would be able to develop the knowledge of photography and photo feature.

Paper 3: Advance Editing Credit – 05Course

Outcomes

CO-1. Students would be able to familiarize themselves with the basics of advance editing.

CO-2. Students would be able to understand the process of advance editing for various platforms.

CO-3. Students would be able to create understanding of specialized reporting.

CO-4. Students would be able to understand about the dummy, printing and layout.

CO-5. Students would be able to develop the knowledge of photography and photo feature

Paper 4: DESIGN & GRAPHICS

Course outcomes

CO-1. The students will get with proper knowledge of principles of design and layout.

CO-2. To understand the history of printing

CO-3. To create understanding of kinds of printing courses.

CO-4. To inculcate the knowledge of dummy page makeup, printing and layout.

CO-5. To develop the knowledge of photography, their editing, screen printing and leaflets and handbills

Paper 5: INDIAN CONSTITUTION & MEDIA LAW

Course Outcomes

CO-1. Shall have understanding of our Indian Constitution.

CO-2. Shall get aware to legal aspects of the media and its values.

CO-3. Shall have an overview of recent changes and future challenges of media regulation

CO-4. Shall have understanding of media ethics.

CO-5. Shall know how media laws and ethics empower media practitioners to perform their duties with commitment.

Semester 5

Paper 1: Advertising

Course Outcomes

CO-1. Students would learn development of advertising and basic concepts.

CO-2. Students would be able to know about role and importance of advertising in media.

CO-3. Learner will have the knowledge of self-employment.

CO-4. Students would know about advertising agencies.

CO-5. Learner would know about the advertising industry and its functioning.

Paper 2: PUBLIC RELATIONS

Course Outcomes

CO-1. Students would learn about the definitions and concepts of public relations, publicity, Propaganda, advertising and PR.

CO-2. Students would know the difference between public relations and corporate communications, public relations and advertising, public relations and propaganda, public relations and publicity, propaganda and publicity.

CO-3. Students would gain knowledge about the tools of public relations.

CO-4. Students would learn the basics of public relations writings.

CO-5. Students would gain knowledge about the basic ethics and laws of public relations.

Paper 3: CURRENT AFFAIRS

Course Outcomes

CO-1. Students would be able to impart the extensive knowledge about general knowledge, general awareness and contemporary activities at local, regional, national and international level about socio-economic issues.

CO-2. Students would be able to develop the extensive knowledge about general knowledge, general awareness and contemporary activities at local, regional, national and international level about political issues

CO-3. Students would be able to inculcate the extensive knowledge about general knowledge, general awareness and contemporary activities at local, regional, national and international level about educational and cultural issues.

CO-4. Students would be able to impart the extensive knowledge about general knowledge, general awareness and contemporary activities at local, regional, national and international level about religious and spiritual issues.

CO-5. Students would be able to develop the extensive knowledge about general knowledge, general awareness and contemporary activities at local, regional, national and international level about media related issues.

Paper 4: INTRODUCTION TO AUDIO-VISUAL MEDIA

Course Outcomes

- CO-1. Students will be able to write scripts of television news stories, special stories and on the spot reporting
- CO-2. Students will be able to cover events and news based stories using mobile phones, video cameras.
- CO-3. Students will anchor, present and able to produce television news bulletin
- CO-4. Students will acquire skills and techniques of television media production
- CO-5. Students will be able to do the editing both offline and online programme of television with using the softwares.

Semester 6

Paper 1: DEVELOPMENT COMMUNICATION

Course Outcomes

- CO-1. Students would learn the concepts meaning and model shop the development
- CO-2. Students would be able to understand the problems and hurdles in development communication.
- CO-3. Learner would understand the working of government and administration in development.
- CO-4. Students would know different programmes and policies of the development.
- CO-5. Learner would know the rural India and its problems he also will understands the communication gap

Paper 2: FILM JOURNALISM

Course outcomes

- CO-1. It will provide proper and depth knowledge of cinema and its birth.
- CO-2. Students will get knowledge about trend setter film directors.
- CO-3. This provide knowledge about film as an art.
- CO-4. Student will learn film language and grammar

Paper 3: EDITORIAL & FEATURE WRITING

Course outcomes

- CO-1. Student will get knowledge about editorial policies, content of editorial page and style of writing.
- CO-2. Students will learn ethics of editorial writing and feature writing.
- CO-3. Student will know importance of human interest in features.

Paper 4: NEWSPAPER MANAGEMENT

Course outcomes

- CO-1. This course provides all detailed information about management and its importance for newspaper industry.
- CO-2. Student will learn newspaper as an industrial product and its unique features.
- CO-3. It will provide the concept of ownership and newspaper printing department.
- CO-4. Student will learn about language of newspaper.

MASTER OF ARTS IN MASS COMMUNICATION M.A.M.C

Programme Outcomes

- PO-1. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction: Provide a social exchange between two or more individuals.

PO-4. Effective Citizenship: Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-5. Ethics: Recognize different value and moral systems and correlate them with present system.

PO-6. Environment & Sustainability: To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.

PO-7. Self-Directed & Life-long learning: It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

Programme Specific Outcomes

The key outcomes planned in this postgraduate programme in Mass communication & Journalism are underpinned as follows: After completing this postgraduate programme, a learner:

PSO-1. Shall acquire fundamental knowledge of Mass communication & Journalism and related study area.

PSO-2. Shall acquire the knowledge related to media and its impact.

PSO-3. Shall be competent enough to undertake professional job as per demands and requirements of M & E Industry.

PSO-4. Shall empower themselves by communication, professional and life skills.

Semester 1

Paper 1: Communication Theories

Course outcomes

CO-1. Students would learn the concepts meaning and model show the development

CO-2. Students would be able to understand the problems and hurdles in development communication.

CO-3. Learner would understand the working of government and administration in development.

CO-4. Students would know different programmes and policies of the development.

CO-5. Learner would know the rural India and its problems he also will understand the communication gap.

Paper 2: Print Media (Specialized Reporting)

Course Outcomes

CO-1. Students would be able to understand the working pattern of various print media platform.

CO-2. Students would be able to familiarize themselves with the basics of writing of print media.

CO-3. Students would be able to create understanding of various print media content.

CO-4. Students would be able to develop the knowledge of news agency.

CO-5. Students would be able to inculcate the knowledge of book editing.

Paper 3: Public Relations

Course Outcomes

CO-1. Students would learn about the definitions and concepts of public relations, publicity, propaganda, advertising and PR.

CO-2. Students would know the difference between public relations and corporate communications, public relations and advertising, public relations and propaganda, public relations and publicity, propaganda and publicity.

CO-3. Students would gain knowledge about the tools of public relations.

CO-4. Students would learn the basics of public relations writings.

CO-5. Students would gain knowledge about the basic ethics and laws of public relations.

Paper 4: Advertising

Course Outcomes

- CO-1. Students would learn development of advertising and basic concepts.
- CO-2. Students would be able to know about role and importance of advertising in media.
- CO-3. Learner will have the knowledge of self-employment.
- CO-4. Students would know about advertising agencies.
- CO-5. Learner would know about the advertising industry and its functioning.

Paper 5: Advertising & Marketing Research

Course outcomes:

- CO-1. Student will learn evolution of advertising, effective functions and role of advertising.
- CO-2. It will provide knowledge about copy writing, layout and visualization and creativity in advertising.
- CO-3. Students will learn slogans, trademarks, about brand names etc.
- CO-4. They will get knowledge about legal and ethical aspects of advertising, role of consumer forums

Semester- 2

Paper 1 : International Communication

Course outcomes:

- CO-1. It will provide detailed knowledge of cultural dimensions of international communication, political and economic.
- CO-2. It will provide information about communication as human right and UNO-s Universal declaration of human rights.
- CO-3. Students will get knowledge about new communication technology and its impact on news flow satellite.
- CO-4. Students will learn writing and coverage of issues in international communication.

Paper 2: Communication Research

Course Outcomes

- CO-1. Students would learn the definitions and basic concepts of research, communication research, media research and social research.
- CO-2. Students would know the difference between communication research, media research and social research.
- CO-3. Students would gain knowledge about the need, role importance, functions and ethics of research.
- CO-4. Students would learn the concept of each element of research and the interrelations between elements.
- CO-5. Students would learn the various types of research.

Paper 3: Electronics Communication

Course Outcomes

- CO-1. Students will be able to understand the working pattern of electronic media platform.
- CO-2. Students will be able to familiarize the students with the basic techniques of broadcasting.
- CO-3. Students will be able to have understanding of electronic media content creation.
- CO-4. Students will be having the knowledge of script writing.
- CO-5. Students will be having the knowledge of online journalism.

Paper 4: Media Development Laws & Ethics

Course Outcomes

- CO-1. Shall have understanding of our Indian Constitution.
- CO-2. Shall get aware to legal aspects of the media and its values.

CO-3. Shall have an overview of recent changes and future challenges of media regulation

CO-4. Shall have understanding of media ethics.

CO-5. Shall know how media laws and ethics empower media practitioners to perform their duties with commitment.

Paper 5: Media Laws & Ethics

Course Outcomes

CO-1. Shall have understanding of our Indian Constitution.

CO-2. Shall get aware to legal aspects of the media and its values.

CO-3. Shall have an overview of recent changes and future challenges of media regulation

CO-4. Shall have understanding of media ethics.

CO-5. Shall know how media laws and ethics empower media practitioners to perform their duties with commitment.

Semester-3

Paper 1: Media Management

Course outcomes

CO-1. It will provide all depth knowledge about media management and their significance.

CO-2. Students will learn ownership patterns of mass media in india.

CO-3. It will give full information about economics of print and electronic media, budgeting and finance, business and legal aspects.

CO-4. It will provide knowledge about programme production and about foreign equity in Indian media

Paper 2: Editing, Photo Journalism & Computer Application

Course outcomes

CO-1. Students would be able to understand the process of editing for various platforms.

CO-2. Students would be able to familiarize themselves with the basics of editing.

CO-3. Students would be able to create understanding of specialized reporting.

CO-4. Students would be able to understand about the dummy, printing and layout.

CO-5. Students would be able to develop the knowledge of photography.

Paper3: Inter Culture Communication

Course Outcomes

CO-1. This course provides knowledge about cultural communication, value systems and cultural symbols in verbal and non verbal communication.

CO-2. Students will learn perception of the world, varied eastern concepts and retention of information.

CO-3. Students will get knowledge about modern mass media as vehicle of intercultural communication and its barriers, impact of new technology on culture

Paper 4: Television Journalism

Course Outcomes

CO-1. Students will be able to write scripts of television news stories, special stories and on the spot reporting

CO-2. Students will be able to cover events and news based stories using mobile phones, video cameras.

CO-3. Students will anchor, present and able to produce television news bulletin

CO-4. Students will acquire skills and techniques of television media production

CO-5. Students will be able to do the editing both offline and online programme of television with using the softwares

Paper 5: Radio Journalism

Course Outcomes

- CO-1. Students will be able to cover events using mobile phones and right radio news stories
- CO-2. Students can produce radio news bulletin
- CO-3. Students will be able to interview, make radio promos and jingles
- CO-4. Students will be able to apply radio production techniques.
- CO-5. Students will be able to undertake radio programme production in different formats

Semester-4

Paper 1: New Media Application

Course outcomes

- CO-1. Learner will gain basic understanding of communication technology.
- CO-2. Learner will have the basic knowledge of various audio editing tools.
- CO-3. Learner will have hands on experience on video editing techniques.
- CO-4. Learner will be able to create content on various platforms.
- CO-5. Learner will be able to communicate on social media effectively.

Paper 2: Corporate Communication

Course outcomes

- CO-1. It will build students communication skill and provides knowledge of corporate communication.
- CO-2. Students will learn the tools of building corporate identity, image management and brand equity.
- CO-3. They will learn about how to deal or manage crisis management, crises handling theories.
- CO-4. They will learn about new trends in corporate communication

Paper 3: Specialized Paper – Print

Course Outcomes

- CO-1. Students would able to understand the working pattern of various print media platform.
- CO-2. Students would be able to familiarize themselves with the basics of writing of print media.
- CO-3. Students would be able to create understanding of various print media content.
- CO-4. Students would be able to develop the knowledge of news agency.
- CO-5. Students would be able to inculcate the knowledge of book editing.

Paper 4: Specialized Paper – Electronic

Course Outcomes

- CO-1. Students will be able to understand the working pattern of electronic media platform.
- CO-2. Students will able to familiarize the students with the basic techniques of broadcasting.
- CO-3. Students will be able to have understanding of electronic media content creation.
- CO-4. Students will be having the knowledge of script writing.
- CO-5. Students will be having the knowledge of online journalism.

Masters of Journalism & Communication (M.J.C)

- PO-1. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO-2. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).

PO-3. Social Interaction: Provide a social exchange between two or more individuals.

PO-4. Effective Citizenship: Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-5. Ethics: Recognize different value and moral systems and correlate them with present system.

PO-6. Environment & Sustainability: To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.

PO-7. Self-Directed & Life-long learning: It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

Programme Specific Outcomes

The key outcomes planned in this postgraduate programme in Mass communication & Journalism are underpinned as follows: After completing this postgraduate programme, a learner:

PSO-1. Shall acquire fundamental knowledge of Mass communication & Journalism and related study area.

PSO-2. Shall enhance the ability of leadership.

PSO-3. Shall become socially responsible citizen with global vision

PSO-4. Shall be equipped with ICTs competencies including digital literacy.

Semester-1

Course outcomes

CO-1. Students would learn the concepts meaning and model of the communication and development

CO-2. Students would be able to understand the problems and hurdles in development communication.

CO-3. Learner would understand the working of government and administration in development.

CO-4. Students would know different programmes and policies of the development.

CO-5. Learner would know the rural India and its problems he also will understands the communication gap.

Paper 2: Print Media (Specialized Reporting)

Course Outcomes

CO-1. Students would able to understand the working pattern of various print media platform.

CO-2. Students would be able to familiarize themselves with the basics of writing of print media.

CO-3. Students would be able to create understanding of various print media content.

CO-4. Students would be able to develop the knowledge of news agency.

CO-5. Students would be able to inculcate the knowledge of book editing

Paper 3: Public Relations

Course Outcomes

CO-1. Students would learn about the definitions and concepts of public relations, publicity, propaganda, advertising and PR.

CO-2. Students would know the difference between public relations and corporate communications, public relations and advertising, public relations and propaganda, public relations and publicity, propaganda and publicity.

CO-3. Students would gain knowledge about the tools of public relations.

CO-4. Students would learn the basics of public relations writings.

CO-5. Students would gain knowledge about the basic ethics and laws of public relations.

Paper 4 : Advertising

Course Outcomes

- CO-1. Students would learn development of advertising and basic concepts.
- CO-2. Students would be able to know about role and importance of advertising in media.
- CO-3. Learner will have the knowledge of self-employment.
- CO-4. Students would know about advertising agencies.
- CO-5. Learner would know about the advertising industry and its functioning.

Paper 5 : Advertising & Marketing Research

Course outcomes

- CO-1. Student will learn evolution of advertising, effective functions and role of advertising.
- CO-2. It will provide knowledge about copy writing, layout and visualization and creativity in advertising.
- CO-3. Students will learn slogans, trademarks, about brand names etc.
- CO-4. They will get knowledge about legal and ethical aspects of advertising, role of consumer forums.

Semester-2

Paper 1: International Communication

Course outcomes

- CO-1. It will provide detailed knowledge of cultural dimensions of international communication, political and economic.
- CO-2. It will provide information about communication as human right and UNO-s Universal declaration of human rights.
- CO-3. Students will get knowledge about new communication technology and its impact on news flow satellite.
- CO-4. Students will learn writing and coverage of issues in international communication.

Paper 2: Communication Research

Course Outcomes

- CO-1. Students would learn the definitions and basic concepts of research, communication research, media research and social research.
- CO-2. Students would know the difference between communication research, media research and social research.
- CO-3. Students would gain knowledge about the need, role importance, functions and ethics of research.
- CO-4. Students would learn the concept of each element of research and the interrelations between elements.
- CO-5. Students would learn the various types of research.

Paper 3: Electronics Communication

Course Outcomes

- CO-1. Students will be able to understand the working pattern of electronic media platform.
- CO-2. Students will be able to familiarize the students with the basic techniques of broadcasting.
- CO-3. Students will be able to have understanding of electronic media content creation.
- CO-4. Students will be having the knowledge of script writing.
- CO-5. Students will be having the knowledge of online journalism

Paper 4: Media Development

Course Outcomes

- CO-1. Shall have understanding of our Indian Constitution.
- CO-2. Shall get aware to legal aspects of the media and its values.
- CO-3. Shall have an overview of recent changes and future challenges of media regulation
- CO-4. Shall have understanding of media ethics.
- CO-5. Shall know how media laws and ethics empower media practitioners to perform their duties with commitment

Paper 5: Media Laws & Ethics

Course Outcomes

- CO-1. Shall have understanding of our Indian Constitution.
- CO-2. Shall get aware to legal aspects of the media and its values.
- CO-3. Shall have an overview of recent changes and future challenges of media regulation
- CO-4. Shall have understanding of media ethics.
- CO-5. Shall know how media laws and ethics empower media practitioners to perform their duties with commitment

Semester-3

Paper 1: Media Management

Course outcomes:

- CO-1. It will provide all depth knowledge about media management and their significance.
- CO-2. Students will learn ownership patterns of mass media in india.
- CO-3. It will give full information about economics of print and electronic media, budgeting and finance, business and legal aspects.
- CO-4. It will provide knowledge about programme production and about foreign equity in Indian media.

Paper 2: Editing, Photo Journalism & Computer Application

Course outcomes:

- CO-1. Students would be able to understand the process of editing for various platforms.
- CO-2. Students would be able to familiarize themselves with the basics of editing.
- CO-3. Students would be able to create understanding of specialized reporting.
- CO-4. Students would be able to understand about the dummy, printing and layout.
- CO-5. Students would be able to develop the knowledge of photography.

Paper 3: Inter Culture Communication

Course outcomes:

- CO-1. This course provides knowledge about cultural communication, value systems and cultural symbols in verbal and non-verbal communication.
- CO-2. Students will learn perception of the world, varied eastern concepts and retention of information.
- CO-3. Students will get knowledge about modern mass media as vehicle of intercultural communication and its barriers, impact of new technology on culture.

Paper 4 : Television Journalism

Course Outcomes

- CO-1. Students will be able to write scripts of television news stories, special stories and on the spot reporting
- CO-2. Students will be able to cover events and news based stories using mobile phones, video cameras.
- CO-3. Students will anchor, present and able to produce television news bulletin

CO-4. Students will acquire skills and techniques of television media production

CO-5. Students will be able to do the editing both offline and online programme of television with using the softwares.

Paper 5 : Radio Journalism

Course Outcomes

CO-1. Students will be able to cover events using mobile phones and right radio news stories

CO-2. Students can produce radio news bulletin

CO-3. Students will be able to interview, make radio promos and jingles

CO-4. Students will be able to apply radio production techniques.

CO-5. Students will be able to undertake radio programme production in different formats

Semester- 4

Paper 1: New Media Application

Course outcomes:

CO-1. Learner will gain basic understanding of communication technology.

CO-2. Learner will have the basic knowledge of various audio editing tools.

CO-3. Learner will have hands on experience on video editing techniques.

CO-4. Learner will be able to create content on various platforms.

CO-5. Learner will be able to communicate on social media effectively.

Paper 2: Corporate Communication

Course outcomes:

CO-1. It will build students communication skill and provides knowledge of corporate communication.

CO-2. Students will learn the tools of building corporate identity, image management and brand equity.

CO-3. They will learn about how to deal or manage crisis management, crises handling theories.

CO-4. They will learn about new trends in corporate communication

Paper 3: Specialized Paper – Print

Course Outcomes

CO-1. Students would able to understand the working pattern of various print media platform.

CO-2. Students would be able to familiarize themselves with the basics of writing of print media.

CO-3. Students would be able to create understanding of various print media content.

CO-4. Students would be able to develop the knowledge of news agency.

CO-5. Students would be able to inculcate the knowledge of book editing.

Paper 4: Specialized Paper – Electronic

Course Outcomes

CO-1. Students will be able to understand the working pattern of electronic media platform.

CO-2. Students will able to familiarize the students with the basic techniques of broadcasting.

CO-3. Students will be able to have understanding of electronic media content creation.

CO-4. Students will be having the knowledge of script writing.

CO-5. Students will be having the knowledge of online journalism

Bachelor of Journalism & Communication (B.J.C)

Programme Outcomes

- PO-1.** Graduates should be able to do creative research and develop new technologies in the field of concern programme, which can contribute to the industry and to academia.
- PO-2.** Graduates should be able to practice concern programme in a responsible, professional and ethical manner and implement eco-friendly sustainable technologies for the benefit of industry as well as society.
- PO-3.** Graduates obtain position in successful career in industry, research institutions, academic, government organizations and entrepreneurship.
- PO-4.** Graduates to be professionally competent in concern programme to solve the problems in environmental, food, biochemical and biomedical engineering.
- PO-5.** Graduate to be able to interact with their peers in industry and society as engineering professionals and leaders to set up technical ambience in the society.

Programme Specific Outcomes

The key outcomes planned in this postgraduate programme in Mass communication & Journalism are underpinned as follows: After completing this postgraduate programme, a learner:

- PSO-1.** Shall acquire fundamental knowledge of Mass communication & Journalism and related study area.
- PSO-2.** Shall acquire the knowledge related to media and its impact.
- PSO-3.** Shall be competent enough to undertake professional job as per demands and requirements of M & E Industry.
- PSO-4.** Shall empower themselves by communication, professional and life skills.

Semester – I

Paper 1: History of Media & Press Laws

Course outcomes:

- CO-1.** Student would get depth knowledge about journalism and its origin and growth.
- CO-2.** Students would learn about the role of Indian journalism in freedom struggle.
- CO-3.** They will enhance their knowledge through practical work and assignments.
- CO-4.** They would build their communication skill through field work.

Paper 2: Introduction of Mass Communication & Theories

Course outcomes:

- CO-1.** Students would be able to introduce themselves to the theories of Communication.
- CO-2.** Students would be able to inculcate the knowledge of Communication models.
- CO-3.** Students would be able to develop the knowledge of basic elements of Communication.
- CO-4.** Students would be able to acquaint themselves with the various types of Communication and social media.
- CO-5.** Students would be able to strengthen the 5Cs of Communication

Paper 3: Reporting, Feature Writing and News Agency

Course outcomes:

- CO-1. Students would be able to understand the basics of reporting.
- CO-2. Students would be able to familiarize themselves with different types of reporting.
- CO-3. Students would be able to create understanding of specialized reporting.
- CO-4. Students would be able to develop the general understanding of art culture and sports reporting, and feature writing.
- CO-5. Students would be able to know about crime reporting and news agencies and their functions.

Paper 4: Editing Production And Computer Applicatons

Course outcomes:

- CO-1. Students would be able to understand the process of editing for various platforms.
- CO-2. Students would be able to familiarize themselves with the basics of editing.
- CO-3. Students would be able to create understanding of specialized reporting .
- CO-4. Students would be able to understand about the dummy , printing and layout
- CO-5. Students would be able to develop the knowledge of photography.

Semester-2

Paper 1: Principles Of Advertising & Public Relations

Course Outcomes

- CO-1. Students would learn development of advertising and basic concepts.
- CO-2. Students would be able to know about role and importance of advertising in media.
- CO-3. Learner will have the knowledge of self-employment.
- CO-4. Students would know about advertising agencies.
- CO-5. Learner would know about the advertising industry and its functioning.

Paper 2: Audio-Visual Communication (Film, Tv, Radio, Satellite, Video Communication)

Course outcomes:

- CO-1. Students will be able to write scripts of television news stories, special stories and on the spot reporting
- CO-2. Students will be able to cover events and news based stories using mobile phones, video cameras.
- CO-3. Students will anchor, present and able to produce television news bulletin
- CO-4. Students will acquire skills and techniques of television media production
- CO-5. Students will be able to do the editing both offline and online programme of television with using the softwares.

Paper 3- Development Communication

Course outcomes :

- CO-1. Students would learn the concepts meaning and model shop the development
- CO-2. Students would be able to understand the problems and hurdles in development communication.
- CO-3. Learner would understand the working of government and administration in development.
- CO-4. Students would know different programmes and policies of the development.
- CO-5. Learner would know the rural India and its problems he also will understands the communication gap.



University Institute of Computer Science and Application

Programme Offered

1. B.C.A. (Bachelor of Computer Application)
2. M.Sc. (Cyber Security)
3. M.C.A. (Master of Computer Application Lateral entry)

Bachelor of Computer Applications (BCA)

Programme Outcomes

- PO-1.** Graduates should be able to do creative research and develop new technologies in the field of concern programme, which can contribute to the industry and to academia.
- PO-2.** Graduates should be able to practice concern programme in a responsible, professional and ethical manner and implement eco-friendly sustainable technologies for the benefit of industry as well as society.
- PO-3.** Graduates obtain position in successful career in industry, research institutions, academic, government organizations and entrepreneurship.
- PO-4.** Graduates to be professionally competent in concern programme to solve the problems in environmental, food, biochemical and biomedical engineering.
- PO-5.** Graduate to be able to interact with their peers in industry and society as engineering professionals and leaders to set up technical ambience in the society.

Programme Specific Outcomes

- PS0-1.** Ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
- PS0-2.** Ability to design, implement, and evaluate a computer-based system, process, component, or program to solve the given problem.
- PS0-3.** Ability to communicate effectively through oral and written means.
- PS0-4.** Ability to work in a team to achieve a common goal

Semester-1

Paper 1: Fundamentals Of Computer And Programming

Course Outcomes

On successful completion of this course, a student will be able to:

- CO-1.** Handle a computer system for day-to-day use.

- CO-2. Enumerate different types of input/ output devices and types of memory.
- CO-3. Perform basic arithmetic operations using different number systems including binary arithmetic.
- CO-4. Differentiate between system and application software.
- CO-5. Prepare documents /spreadsheets/power point presentation

Paper 2: Operating Systems (Dos, Windows and Unix)

Course Outcomes

- CO-1. Describe the important computer system resources and the role of operating system in their management policies and algorithms.
- CO-2. To understand various functions, structures and history of operating systems and should be able to specify objectives of modern operating systems and describe how operating systems have evolved over time.
- CO-3. Understanding of design issues associated with operating systems.
- CO-4. Understand various process management concepts including scheduling, synchronization, and deadlocks.
- CO-5. To have a basic knowledge about multithreading.

Paper 3: Mathematical Foundation

Course Outcomes

- CO-1. Demonstrate their understanding of and apply methods of discrete mathematics in CS to subsequent courses in algorithm design and analysis, automata theory and computability, information systems, computer networks.
- CO-2. Use logical notation to define fundamental mathematical concepts such as sets & operations on sets, Boolean algebra, relations, functions and various algebraic structures, reason mathematically using such structures,
- CO-3. Evaluate arguments that use such structures. - model and analyze a computation or communication process and construct elementary proofs based on such structures.
- CO-4. Evaluate elementary differentiation, elementary integration and partial differentiation

Paper 4: Programming In C

Course Outcomes

- CO-1. Identify situations where computational methods and computers would be useful.
- CO-2. Given a computational problem, identify and abstract the programming task involved.
- CO-3. Approach the programming tasks using techniques learned and write pseudo-code.
- CO-4. Choose the right data representation formats based on the requirements of the problem.
- CO-5. Use the comparisons and limitations of the various programming constructs and choose the right one for the task in hand.

Paper 5: Communicative English

Course Outcomes

- CO-1. Develop English language skills in listening, speaking, reading and writing by having learners engage in a range of communicative tasks and activities from Canadian Language Benchmarks levels 4 to 9.
- CO-2. Encourage the use of strategies, such as contextualization of new vocabulary, use of previewing, skimming and scanning techniques, and knowledge of text organization and discourse markers, to aid the comprehension of written and spoken language.
- CO-3. Expand the learner's use of grammatically correct and situationally and culturally appropriate language in speaking and writing for effective communication in a variety of interpersonal and academic situations.
- CO-4. Create awareness about learning styles and college resources, encourage the adoption of study skills, and increase competence in the use of technology so that learners may more effectively achieve academic goals.

CO-5. Build cross-cultural understanding and confidence in using language through collaboration with classmates, increased participation in college activities, and increased interaction within the college and the larger community in order to complete class assignments such as surveys, reports and presentations.

Semester-2

Paper 1: Computer System Architecture

Course Outcomes

- CO-1.** To make students understand the basic structure, operation and characteristics of digital computer.
- CO-2.** To familiarize the students with arithmetic and logic unit as well as the concept of the concept of pipelining.
- CO-3.** To familiarize the students with hierarchical memory system including cache memories and virtual memory.
- CO-4.** To make students know the different ways of communicating with I/O devices and standard I/O interfaces.

Paper 2: Internet Concepts and Web Design

Course Outcome

- CO-1.** HTML is highly flexible and supported on all browsers.
- CO-2.** User friendly and an open technology.
- CO-3.** CSS provides powerful control over the presentation of an HTML document.
- CO-4.** CSS saves many times as it can be reused in many HTML pages.
- CO-5.** CSS can be used to make responsive web pages, which are compatible on multiple devices.

Paper 3 : Data Structure & Algorithms

Course Learning Outcomes

- CO-1.** Implement and empirically analyse linear and non-linear data structures like Arrays, Stacks, Queues, Lists, Trees, Heaps and Hash tables as abstract data structures.
- CO-2.** Write a program, choosing a data structure, best suited for the application at hand.
- CO-3.** Re-write a given program that uses one data structure, using a more appropriate/efficient data Structure.
- CO-4.** Write programs using recursion for simple problems.
- CO-5.** Explain the advantages and disadvantages of recursion.

Paper 4 : CYBER SECURITY

Course Learning Outcomes

- CO-1.** Develop a basic understanding of cryptography, how it has evolved, and some key encryption techniques used today.
- CO-2.** Develop an understanding of security policies (such as authentication, integrity and confidentiality).
- CO-3.** Develop an understanding of Cryptography and Network Security.
- CO-4.** Identify some of the factors driving the need for Cyber security
- CO-5.** Identify and classify particular examples of attacks

Paper 5: Discrete Mathematics

Course Learning Outcomes

- CO-1.** Upon completion of the course, the student will be able to use logical notation
- CO-2.** Perform logical proofs
- CO-3.** Apply recursive functions and solve recurrence relations
- CO-4.** Determine equivalent logic expressions

CO-5. Describe useful standard library functions, create functions, and declare parameters

Semester-3

Paper 1: Data Base Management System

Course Outcomes

- CO-1. Differentiate between database systems and file systems.
- CO-2. Describe the features of database management systems.
- CO-3. Analyses the problem and arrive at an information model in the form of an ER diagram.
- CO-4. Normalize a database.
- CO-5. Transform an ER model into a relational database schema.

Paper 2: OOPS IN C ++

Course Outcomes

- CO-1. Learn the concepts of data, abstraction and encapsulation
- CO-2. Be able to write programs using classes and objects, packages.
- CO-3. Understand conceptually principles of Inheritance and Polymorphism and their use and program level implementation.
- CO-4. Learn exception and basic event handling mechanisms in a program
- CO-5. To learn typical object-oriented constructs of specific object-oriented programming language

Paper3: E-Commerce Security

Course Outcomes

- CO-1. Understand the basic concepts and technologies used in the field of management information systems;
- CO-2. Have the knowledge of the different types of management information systems.
- CO-3. Understand the processes of developing and implementing information systems.
- CO-4. Create a marketing plan and promotional plan for an ecommerce site.
- CO-5. Create a strategy for the different, non-traditional areas surrounding ecommerce.

Paper 4: Principles Of Management

Course Outcomes

- CO-1. Understand the nature of management and describe the functions of management.
- CO-2. Understand the Information presentation and reporting
- CO-3. Principles and Types of report MIS.
- CO-4. Develop understanding of different approaches to designing organizational structures.
- CO-5. Understand the role of personality, learning and emotions at work.

Paper 5- El-1: Internet Of Things

Course Outcomes

- CO-1. Able to understand the application areas of IOT.
- CO-2. Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks.
- CO-3. Able to understand building blocks of Internet of Things and characteristics.

Paper 6- El-2: Digital Image Processing

Course Outcomes

- CO-1. Describe and explain basic principles of digital image processing.
- CO-2. Design and implement algorithms that perform basic image processing (e.g. noise removal and imageenhancement).
- CO-3. Design and implement algorithms for advanced image analysis (e.g. image compression, image segmentation).
- CO-4. Assess the performance of image processing algorithms and systems.

Paper 7- EI-3: Cloud Computing

Course Outcomes

- CO-1.** Explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing.
- CO-2.** Apply the fundamental concepts in datacenters to understand the tradeoffs in power, efficiency and cost.
- CO-3.** Identify resource management fundamentals, i.e. resource abstraction, sharing and sandboxing and outline their role in managing infrastructure in cloud computing.
- CO-4.** Analyze various cloud programming models and apply them to solve problems on the cloud.

Paper 8- EI-4: Client-Server Computing

Course Outcomes

Understand how new systems can be built to work effectively with today's capabilities and at the same time can be based on a technical architecture that will allow them to take advantage of future technologies.

Semester-4

Paper 1: Programming With Vb.Net

Course Outcomes

- CO-1.** Understand the programming algorithm, process, and structure
- CO-2.** Understand and identify the fundamental concepts of object-oriented programming
- CO-3.** Understand .NET Framework and describe some of the major enhancements to the new version of Visual Basic.
- CO-4.** Describe the basic structure of a Visual Basic.NET project and use main features of the integrated development environment (IDE)

Paper 2: Financial Accounting And Tally

Course Outcomes

- CO-1.** This course helps students to work with well-known accounting software i.e. Tally ERP.9
- CO-2.** Student will learn to create company, enter accounting voucher entries including advance voucher entries, do reconcile bank statement, do accrual adjustments, and also print financial statements, etc. in Tally ERP.9 software
- CO-3.** Accounting with Tally certificate course is not just theoretical program, but it also includes continuous practice, to make students ready with required skill for
- CO-4.** employability in the job market.

Paper 3: Theory Of Operating Systems

Course Outcomes

- CO-1.** Describe the important computer system resources and the role of operating system in their management policies and algorithms.
- CO-2.** To understand various functions, structures and history of operating systems and should be able to specify objectives of modern operating systems and describe how operating systems have evolved overtime.
- CO-3.** Understanding of design issues associated with operating systems.
- CO-4.** Understand various process management concepts including scheduling, synchronization, and deadlocks.
- CO-5.** To have a basic knowledge about multithreading.

Paper 4: Software Engineering

Course Outcomes

- CO-1.** Basic knowledge and understanding of the analysis and design of complex systems.
- CO-2.** Ability to apply software engineering principles and techniques.
- CO-3.** To produce efficient, reliable, robust and cost-effective software solutions.
- CO-4.** Ability to work as an effective member or leader of software engineering teams.

CO-5. To manage time, processes and resources effectively by prioritizing competing demands

Paper 5 - El-1: System Analysis And Design Management Information System (Sad/Mis)

Course Outcomes

CO-1. This module aims to as to introduce variety of new software used by analysts, designers to manage projects, analyze and document systems, design new systems and implement their plans.

CO-2. It introduces also a recent coverage of UML, wireless technologies and ERP; web based systems for e-commerce and expanded coverage on RAD and GUI design.

CO-3. Translate the role of information systems in organizations, the strategic management processes, with their implications for the management.

Paper 6- El-2: E-Mobile Technology

Course Outcomes

CO-1. Understand cellular concepts like frequency reuse, hand-off and Interference.

CO-2. Apply knowledge of reflection, diffraction and scattering to calculate link budget using path loss models.

CO-3 Understand the importance of Equalization and different diversity techniques.

CO-4. Know fundamentals of GSM. viz., channels, coding techniques, data transmission, services.

CO-5. Know fundamentals of CDMA. viz., channels, coding techniques, data transmission, services.

Paper 7- EL-3: PHP and My-SQL

Course Outcomes

CO-1. This course is specially designed for students who are interested in learning the hottest programming language PHP and specially those who are interested in Web development with minimum entry requirements.

CO-2. Students who don't have any programming experience or programming knowledge in using object oriented techniques are encouraged to attend this course.

CO-3. Write PHP code to produce outcomes and solve problems.

CO-4. Display and insert data using PHP and MySQL.

CO-5. Test, debug, and deploy web pages containing PHP and MySQL.

Paper 8- El-4: Python Programming

Course Outcomes

CO-1. Improve programming skills

CO-2. To develop console application in python

CO-3. To develop database application in python

CO-4. Appreciate Python Programming Paradigm

CO-5. Hands on Regular Expression

Semester-5

Paper 1 : Computer Network

Course Outcomes

CO-1. Understand the structure of Data Communications System and its components.

CO-2. Be familiarize with different network terminologies.

CO-3. Familiarize with contemporary issues in network technologies.

CO-4. Know the layered model approach explained in OSI and TCP/IP network models.

CO-5. Identify different types of network devices and their functions within a network.

Paper 2: Asp.Net With C# Programming

Course Outcomes

CO-1. Introduce to .NET IDE Component Framework.

CO-2. Programming concepts in .NET Framework.

CO-3. Creating website using ASP.NET Controls.

CO-4. ASP.NET is a server-side scripting language introduced by the Microsoft for building dynamic web pages.

CO-5. Create user interactive web pages using ASP.Net.

Paper 3: Java Programming

Course Outcomes

CO-1. Develop software in the Java programming language,

CO-2. Identify classes, objects, members of a class and relationships among them needed for a specific problem

CO-3. Use the Java programming language for various programming technologies

CO-4. Knowledge of object-oriented paradigm in the Java programming language.

CO-5. Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirement

Paper 4 : Data Mining Concepts

Course Outcomes

CO-1. Learn the concepts of database technology evolutionary path which has led to the need for data mining and its applications.

CO-2. Examine the types of the data to be mined and present a general classification of tasks and primitives to integrate a data mining system.

CO-3. Apply preprocessing statistical methods for any given raw data.

CO-4. Explore DWH and OLAP, and devise efficient & cost effective methods for maintaining DWHs.

Paper 5- EI-1: Software Testing And Quality Assurance

Course Outcomes

CO-1. Design and develop the bug free software systems using basic concepts of software testing.

CO-2. Identify, formulate, review, estimate and analyze complex engineering problems of software testing using principles of mathematics.

CO-3. Create, select and apply appropriate techniques, modern engineering concepts and IT tools for software testing.

CO-4. Apply verification, validation activities, static, dynamic testing, debugging tools and techniques and importance of working in teams.

CO-5. Implement concepts of object oriented testing, web testing and regression testing.

Paper 6- EI-2: Open Source Technology

Course Outcomes

CO-1. Learned the need of open source technology, open source development model, application of open sources, aspects of open source movement

CO-2. The students will be aware about the problems with traditional commercial software.

CO-3. The student will be familiar with basis syntax of PHP, common PHP scripts elements.

CO-4. The student will be familiar with creating of the server side scripting using PHP.

CO-5. Implement PHP database connectivity, perform operation on database and open source database management system.

Paper 7- EI-3: System Programming Using Linux

Course Outcomes

CO-1. Grasp the concepts and principles, and be familiar with the approaches and methods of developing system-level software (e.g., compiler, and networking software);

CO-2. Apply the knowledge and techniques learnt to develop solutions to realworld problems;

CO-3. Select and make use of the OS kernel functions and their APIs, standard programming languages, and utility tools;

CO-4. Organize and manage software built for deployment and demonstration;

CO-5. Students will be able to create file systems and directories and operate them.

Paper 8- EI-4: Advanced Database Management System

Course Outcomes

- CO-1.** Create Stored Database Procedures for writing consistent, well-tuned backend code.
- CO-2.** Develop database application using XML data model.
- CO-3.** Understand developments in database technologies.
- CO-4.** Understand developments NOSQL.

M.Sc. (Cyber Security)

Programme Outcomes (PO)

- PO-1.** Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2.** Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3.** Social Interaction: Provide a social exchange between two or more individuals.
- PO-4.** Effective Citizenship: Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5.** Ethics: Recognize different value and moral systems and correlate them with present system.
- PO-6.** Environment & Sustainability: To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7.** Self-Directed & Life-long learning: It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

Programme Specific Outcomes (PSO)

Upon successful completion of the programme, candidates'

- PSO-1.** Expertise with cyber security landscapes.
- PSO-2.** Able to Analyze and evaluate the cyber security needs of an organization.
- PSO-3.** Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.
- PSO-4.** Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools.

Semester-1

Paper 1: Microprocessor Architecture & Assembly Language Programming

Course Outcomes

- CO-1.** Describe the architecture of 8085.
- CO-2.** Illustrate the organization of registers and memory in microprocessors.
- CO-3.** Differentiate Minimum and Maximum Mode bus cycle.
- CO-4.** Identify the addressing mode of an instruction.
- CO-5.** Develop programming skills in assembly language.

Paper 2 : Operating System Design Principle

Course Outcomes

Describe the important computer system resources and the role of operating system in their management policies and algorithms.

- CO-1.** To understand various functions, structures and history of operating systems and should be able to specify objectives of modern operating systems and describe how operating systems have evolved overtime.
- CO-2.** Understanding of design issues associated with operating systems.
- CO-3.** Understand various process management concepts including scheduling, synchronization, and deadlocks.
- CO-4.** To have a basic knowledge about multithreading.
- CO-5.** To understand concepts of memory management including virtual memory.

Paper 3 : Fundamentals Of Information Security

Course Outcomes

- CO-1.** Develop an understanding of information assurance as practiced in computer operating systems, distributed systems, networks and representative applications.
- CO-2.** Gain familiarity with prevalent network and distributed system attacks, defenses against them, and forensics to investigate the aftermath.
- CO-3.** Develop a basic understanding of cryptography, how it has evolved, and some key encryption techniques used today.
- CO-4.** Develop an understanding of security policies (such as authentication, integrity and confidentiality), aswell as protocols to implement such policies in the form of message exchanges.
- CO-5.** Develop an understanding of Firewalls, Improving Security through Firewalls.

Paper 4: Compiler Design

Course Outcomes

- CO-1.** After completion of this course each student will implement a compiler for a small programming language.
- CO-2.** Define the phases of a typical compiler, including the front- and backend.
- CO-3.** Identify tokens of a typical high-level programming language; define regular expressions for tokens and design; implement a lexical analyzer using a typical scanner generator.
- CO-4.** Explain the role of a parser in a compiler and relate the yield of a parse tree to a grammar derivation; design and implement a parser using a typical parser generator.
- CO-5.** Apply an algorithm for a top-down or a bottom-up parser construction; construct a parser for a small context-free grammar.

Semester-2

Paper 1: Internals Of Operating Systems

Course Outcomes

- CO-1.** Describe the basic concepts of operating systems, including development and achievements, functionalities and objectives, structure and components
- CO-2.** Explain how memory, I/O devices, files, processes and threads are managed, and evaluate the performance of various scheduling algorithms
- CO-3.** Explain the concepts covered in concurrency control, including mutual exclusion and synchronization, deadlock and starvation
- CO-4.** Develop software using multi process and multithread programming techniques
- CO-5.** Analyze the relationship between the operating system and the hardware environment in which it runs

Paper 2: Computer Networks

Course Outcomes

- CO-1.** Understand the structure of Data Communications System and its components. Be familiarize with different network terminologies.
- CO-2.** Familiarize with contemporary issues in network technologies.
- CO-3.** Know the layered model approach explained in OSI and TCP/IP network models.
- CO-4.** Identify different types of network devices and their functions within a network.
- CO-5.** Learn basic routing mechanisms, IP addressing scheme and internetworking concepts.

Paper 3: DIGITAL FORENSICS AND TOOLS

Course Outcomes

- CO-1. Explain the origins of forensic science
- CO-2. Understand and utilize the fundamental concept of computers and digital forensics
- CO-3. Students shall be prepared for various technologies/tools to combat and investigate computer and cybercrimes.
- CO-4. The first part deals with fundamentals of computer architecture, importance of hardware , software , input output devices, processor, memory, storage devices, then make you learn about various file systems and encoding and decoding in computers.
- CO-5. The second half of the syllabus is dedicated to various types of cyber-crimes and its investigation and finally we would understand some of the challenges faced in present scenario.

Paper 4-El-1: Advanced Data Structures

Course Outcomes

- CO-1. To be familiar with fundamental data structures and with the manner in which these data
- CO-2. structures can best be implemented; become accustomed to the description of algorithms in both functional and procedural styles
- CO-3. To have knowledge of complexity of basic operations like insert, delete, search on these data structures.
- CO-4. Ability to choose a data structure to suitably model any data used in computer applications.
- CO-5. Design programs using various data structures including hash tables, Binary and general search trees, heaps, graphs etc.

Paper 5-El- 2: Mathematical Foundations Of Information Security

Course Outcomes

- CO-1. Effectively express the concepts and results of Number Theory.
- CO-2. Understand basic concepts of various algebraic structures and theorems like Euler's theorem for
- CO-3. Designing security algorithm.
- CO-4. Understand coding theory which will be useful for data compression, information hiding.
- CO-5. Illustrate various pseudorandom number generation used for designing security protocols and for its analysis.

Paper 6-El-3: Python Programming

Course Outcomes

- CO-1. Develop and execute simple Python programs.
- CO-2. Structure a Python program into functions.
- CO-3. Using Python lists, tuples to represent compound data
- CO-4. Develop Python Programs for file processing

Semester-3

Paper 1: Secure Software Engineering

Course Outcomes

- CO-1. Basic knowledge and understanding of the analysis and design of complex systems.
- CO-2. Ability to apply software engineering principles and techniques.
- CO-3. To produce efficient, reliable, robust and cost-effective software solutions.
- CO-4. Ability to work as an effective member or leader of software engineering teams.
- CO-5. To manage time, processes and resources effectively by prioritizing competing demands to achieve personal and team goals Identify and analyzes the common threats in each domain.

Paper 2: Computer Forensics Analysis And Investigations

Course Outcomes

- CO-1. Understand and utilize the fundamental concept of computers and digital forensics.
- CO-2. Students shall be prepared for various technologies/tools to combat and investigate computer and cybercrimes.

CO-3. Dedicated to various types of cyber-crimes and its investigation and finally we would understand some of the challenges faced in present scenario.

CO-4. Outline a range of situations where digital forensics may be applicable.

CO-5. Determining what data to collect and analyze.

Paper 3: Cryptography & Network Security

Course Outcomes

CO-1. Learn fundamentals of cryptography and its application to network security.

CO-2. Understand network security threats, security services, and countermeasures.

CO-3. Acquire background on well-known network security protocols such as IPSec, SSL, and WEP.

CO-4. Understand vulnerability analysis of network security.

CO-5. Acquire background on hash functions; authentication; firewalls; intrusion detection techniques.

Paper 4- EI-1: E-Commerce Security

Course Outcomes

CO-1. Understand the basics of E-commerce, current and emerging business models.

CO-2. Familiarize with basic business operations such as sales, marketing, HR etc. on the web.

CO-3. Enhance the students' skills for designing and developing website.

CO-4. Identify the emerging modes of e-payment.

CO-5. Understand the importance of security, privacy, ethical and legal issues of e-commerce.

Paper 5-EI-2: Artificial Intelligence

Course Outcomes

CO-1. Explain what constitutes "Artificial" Intelligence and how to identify systems with Artificial Intelligence.

CO-2. Identify problems that are amenable to solution by AI methods, and which AI methods may be suited to solving a given problem.

CO-3. Formalize a given problem in the language/framework of different AI methods (e.g., as a search problem, as a constraint satisfaction problem, as a planning problem, etc).

CO-4. Identify appropriate AI technique for the problem at hand

CO-5. Compare strengths and weaknesses of different artificial Intelligence techniques.

Paper 6-EI-3: Machine Learning

Course Outcomes

CO-1. Differentiate between supervised, unsupervised machine learning approaches

CO-2. Ability to choose appropriate machine learning algorithm for solving a problem

CO-3. Design and adapt existing machine learning algorithms to suit applications

CO-4. Understand the underlying mathematical relationships across various machine learning algorithms

CO-5. Design and implement machine learning algorithms to real world applications.

Semester-4

Paper 1 : Ethical Hacking

Course Outcomes

CO-1. Learn the difference between a vulnerability assessment and a penetration test

CO-2. Learn about the different tools and techniques that hackers—including ethical hackers—employ

CO-3. Discover the elements of a four-phase penetration test and how the four phases help a successful test

CO-4. Knowledge: Students will learn the underlying principles and techniques associated with the cybersecurity practice known as penetration testing or ethical hacking. They will become familiar with the entire penetration testing process including planning, reconnaissance, scanning, exploitation, post-exploitation and result reporting.

CO-5. Skills: For every offensive penetration technique the students will learn the corresponding remedial technique. By this, the students will develop a practical understanding of the current cybersecurity issues and the ways how the errors made by users, administrators, or programmers can lead to exploitable insecurities.

Paper 2: Cyber Laws And Information Security

Course Outcomes

- CO-1. Understand the constraints of cyber law and security concern.
- CO-2. Understand the importance of information security and how can manage the security of network as well as data.
- CO-3. Know the working of security models and applied algorithms.

Master of Computer Applications (MCA)

Programme Outcomes

- PO-1. Problem Analysis:** Identify, formulate and solve complex computing problems reaching substantiated conclusions.
- PO-2. Development of Solutions:** Design and evaluate solutions for complex computing problems with appropriate consideration.
- PO-3. Investigations of complex Computing problems:** Use research-based knowledge and research methods for analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO-4. Modern Tool Usage:** Create, identify and apply appropriate techniques, resources, and modern computing tools to complex computing activities.
- PO-5. Professional Ethics:** Understand and commit to professional ethics and cyber regulations for professional computing practices.
- PO-6. Life-long Learning:** Identify the need and have the ability, to engage in independent learning as a computing professional.
- PO-7. Project management and finance:** Understand and apply computing, management principles to manage multidisciplinary projects.

Programme Specific Outcomes

- PSO-1.** The students will be able to improve their technical skill, research, innovations in computer Science and Information Technology for significant contribution to the globalized technical society, industry and nation.
- PSO-2.** Apply the knowledge of computer application to find solutions for real-life application.
- PSO-3.** Ability to analyze, design, develops and maintains the software application with latest technologies.
- PSO-4.** Utilize skills and knowledge for computing practice with commitment on social, ethical, cyber and legal values.

Semester-1

Paper 1: Object Oriented Programming In C++

Course Outcomes

- CO-1. Learn the concepts of data, abstraction and encapsulation.
- CO-2. Be able to write programs using classes and objects, packages.
- CO-3. Understand conceptually principles of Inheritance and Polymorphism and their use and program level implementation.
- CO-4. Learn exception and basic event handling mechanisms in a program.
- CO-5. To learn typical object-oriented constructs of specific object oriented programming language.

Paper 2: Relational data base management system (sql prog. using oracle)

Course Outcomes

- CO-1. Gain knowledge of database systems and database management systems software.
- CO-2. Ability to model data in applications using conceptual modelling tools such as ER Diagrams and design data base schemas based on the model.

CO-3. Formulate, using SQL, solutions to a broad range of query and data update problems.

CO-4. Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.

CO-5. Be acquainted with the basics of transaction processing and concurrency control.

Paper 3: Computer Network

Course Outcomes

CO-1. Understand the structure of Data Communications System and its components. Be familiarizing with different network terminologies.

CO-2. Familiarize with contemporary issues in network technologies.

CO-3. Know the layered model approach explained in OSI and TCP/IP network models.

CO-4. Identify different types of network devices and their functions within a network.

CO-5. Learn basic routing mechanisms, IP addressing scheme and internetworking concepts.

Paper 4: Operational Research

Course Outcomes

CO-1. Analyze any real life system with limited constraints and depict it in a model form.

CO-2. Convert the problem into a mathematical model.

CO-3. Explain the concepts of linear programming problem

CO-4. Solve the linear programming problem by using Simplex method. Computational steps of Big-m-Method. Write the dual of the given linear programming problem.

CO-5. Find the initial basic feasible solution to the given Assignment problems.

Paper 5: Operating System Concepts

Course Outcomes

CO-1. Describe the important computer system resources and the role of operating system in their management policies and algorithms.

CO-2. To understand various functions, structures and history of operating systems and should be able to specify objectives of modern operating systems and describe how operating systems have evolved over time.

CO-3. Understanding of design issues associated with operating systems.

CO-4. Understand various process management concepts including scheduling, synchronization, and deadlocks.

CO-5. To have a basic knowledge about multithreading.

Semester-2

Paper 1: Object Oriented Analysis & Design

Course Outcomes

CO-1. Basic knowledge and understanding of the analysis and design of complex systems.

CO-2. Ability to apply software engineering principles and techniques.

CO-3. To produce efficient, reliable, robust and cost-effective software solutions.

CO-4. Ability to work as an effective member or leader of software engineering teams.

CO-5. To manage time, processes and resources effectively by prioritizing competing demands to achieve personal and team goals Identify and analyzes the common threats in each domain.

Paper 2: .Net Technologies

Course Outcomes

CO-1. Use .NET framework architecture, various tools, and Validation techniques,

CO-2. Use of different templates available in Visual Studio.

CO-3. Implementation and testing strategies in real time applications.

CO-4. Use advanced concepts related to Web Services, WCF, and WPF in project development.

CO-5. Understand the programming algorithm, process, and structure

Paper 3: Java Programming

Course Outcomes

- CO-1. Knowledge of the structure and model of the Java programming language,
- CO-2. Use the Java programming language for various programming technologies
- CO-3. Develop software in the Java programming language,
- CO-4. Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements
- CO-5. Identify Java code utilities in applets, awt, I/O, Java packages, and classes.

Paper 4: Theory Of Computation

Course Outcomes

- CO-1. Demonstrate advanced knowledge of formal computation and its relationship to languages.
- CO-2. Distinguish different computing languages and classify their respective types.
- CO-3. Recognize and comprehend formal reasoning about languages.
- CO-4. Design a finite automaton, pushdown automaton or a Turing machine for a problem at hand.
- CO-5. Apply pumping lemma to prove that a language is non-regular/non-context-free.

Paper 5: Computer Graphics With Multimedia

Course Outcomes

- CO-1. Acquire familiarity with the concepts and relevant mathematics of computer graphics.
- CO-2. Ability to implement various algorithms to scan, convert the basic geometrical primitives, transformations, area filling, clipping.
- CO-3. Describe the importance of viewing and projections.
- CO-4. Ability to design basic graphics application programs.
- CO-5. Familiarize with fundamentals of animation and Virtual reality technologies

Paper 6-El-3: Advanced Data Structures

Course Outcomes

- CO-1. To be familiar with fundamental data structures and with the manner in which these data structures can best be implemented; become accustomed to the description of algorithms in both functional and procedural styles
- CO-2. To have knowledge of complexity of basic operations like insert, delete, search on these data structures.
- CO-3. Ability to choose a data structure to suitably model any data used in computer applications.
- CO-4. Design programs using various data structures including hash tables, Binary and general search trees, heaps, graphs etc.
- CO-5. Ability to assess efficiency tradeoffs among different data structure implementations.

Paper 7: Software Engineering

Course Outcomes

- CO-1. Students will get foundation of software engineering, various process models and can apply the new models in development process.
- CO-2. Students will have effective communication and interaction skills for requirement engineering tasks.
- CO-3. Students can apply design principles for various types of software and designing object-oriented software using UML tools.
- CO-4. Students can implement testing strategies thoroughly using testing tools.
- CO-5. Students will understand the need of lifelong learning and adapt to new software engineering concepts.

Paper 8: Open-Source Software Development

Course Outcomes

Ability to install and run open-source operating systems. Ability to gather information about Free and Open-Source Software projects from software releases and from sites on the internet. Ability to build and modify one or more Free and Open-Source Software packages. Ability to use a version control system and to interface with version control systems used by development communities.

Ability to contribute software to and interact with Free and Open-Source Software development projects.

Paper 9: Unix Administration & Shell Scripting

Course Outcomes

- CO-1. Describe the architecture and features of UNIX Operating System and distinguish it from other Operating System
- CO-2. Demonstrate UNIX commands for file handling and process control
- CO-3. Write Regular expressions for pattern matching and apply them to various filters for a specific task
- CO-4. Analyze a given problem and apply requisite facets of SHELL programming in order to devise a SHELL script to solve the problem.

Semester-3

Paper 1: Digital Forensics

Course Outcomes

- CO-1. Explain the origins of forensic science
- CO-2. Understand and utilize the fundamental concept of computers and digital forensics
- CO-3. Students shall be prepared for various technologies/tools to combat and investigate computer and cybercrimes.
- CO-4. The first part deals with fundamentals of computer architecture, importance of hardware , software , input/output devices, processor, memory, storage devices, then make you learn about various file systems and encoding and decoding in computers.
- CO-5. The second half of the syllabus is dedicated to various types of cyber-crimes and its investigation and finally we would understand some of the challenges faced in present scenario.

Paper 2 : Python Programming

Course Outcomes

- CO-1. Develop and execute simple Python programs.
- CO-2. Structure a Python program into functions.
- CO-3. Using Python lists, tuples to represent compound data
- CO-4. Develop Python Programs for file processing

Paper 3: Cloud Computing

Course Outcomes

- CO-1. Analyze the trade-offs between deploying applications in the cloud and over the local infrastructure.
- CO-2. Compare the advantages and disadvantages of various cloud computing platforms.
- CO-3. Deploy applications over commercial cloud computing infrastructures such as Amazon Web Services, Windows Azure, and Google App Engine.
- CO-4. Program data intensive parallel applications in the cloud.
- CO-5. Analyze the performance, scalability, and availability of the underlying cloud technologies and software.

Paper 4-El-1: Data Warehousing & Data Mining

Course Outcomes

- CO-1. Understand data mining principles and techniques: Introduce DM as a cutting-edge business intelligence method and acquaint the students with the DM techniques for building competitive advantage through proactive analysis, predictive modelling, and identifying new trends and behaviors. Learning objectives include.
- CO-2. Building basic terminology.
- CO-3. Learning how to gather and analyze large sets of data to gain useful business understanding.
- CO-4. Learning how to produce a quantitative analysis report/memo with the necessary information to make decisions.

CO-5. Describing and demonstrating basic data mining algorithms, methods, and tools

Paper 5: Machine Learning

Course Outcomes

CO-1. Differentiate between supervised, unsupervised machine learning approaches

CO-2. Ability to choose appropriate machine learning algorithm for solving a problem

CO-3. Design and adapt existing machine learning algorithms to suit applications

CO-4. Understand the underlying mathematical relationships across various machine learning algorithms

CO-5. Design and implement machine learning algorithms to real world applications.

Paper 6-El-3: Big Data Hadoop

Course Outcomes

CO-1. Ability to identify the characteristics of datasets and compare the trivial data and big data for various applications.

CO-2. Ability to select and implement machine learning techniques and computing environment that are suitable for the applications under consideration.

CO-3. Ability to solve problems associated with batch learning and online learning, and the big data characteristics such as high dimensionality, dynamically growing data and in particular scalability issues.

CO-4. Ability to understand and apply scaling up machine learning techniques and associated computing techniques and technologies.

CO-5. Ability to recognize and implement various ways of selecting suitable model parameters for different machine learning techniques.

Paper 7-El-4: Computer Vision & Digital Image Processing

Course Outcomes

CO-1. Describe general terminology of Digital Image Processing and the roles of image processing systems in a variety of applications.

CO-2. Describe the basic issues and the scope (or principal applications) of image processing.

CO-3. Explain representation and manipulation of digital images, image acquisition, reading, writing, enhancement, displaying and segmentation and image Fourier transform.

CO-4. Various types of images, intensity transformations and spatial filtering.

CO-5. Understand the basic theory and algorithms that are widely used in digital image processing.

Paper 8-El-1: Compiler Design

Course Outcomes

CO-1. After completion of this course each student will implement a compiler for a small programming language.

CO-2. Define the phases of a typical compiler, including the front- and backend.

CO-3. Identify tokens of a typical high-level programming language; define regular expressions for tokens and design; implement a lexical analyzer using a typical scanner generator.

CO-4. Explain the role of a parser in a compiler and relate the yield of a parse tree to a grammar derivation; design and implement a parser using a typical parser generator.

CO-5. Apply an algorithm for a top-down or a bottom-up parser construction; construct a parser for a small context-free grammar.

Paper 4-El-2: Artificial Intelligence

Course Outcomes

CO-1. Explain what constitutes "Artificial" Intelligence and how to identify systems with Artificial Intelligence.

CO-2. Identify problems that are amenable to solution by AI methods, and which AI methods may be suited to solving a given problem.

CO-3. Formalize a given problem in the language/framework of different AI methods (e.g., as a search problem, as a constraint satisfaction problem, as a planning problem, etc).

CO-4. Identify appropriate AI technique for the problem at hand.

CO-5. Compare strengths and weaknesses of different artificial Intelligence techniques.

Paper 5-El-3: Cyber Laws And Information Security

Course Outcomes

CO-1. Understand the constraints of cyber law and security concern.

CO-2. Understand the importance of information security and how can manage the security of network as well as data.

CO-3. Know the working of security models and applied algorithms.

Paper 6-El-4: Bioinformatics

Course Outcomes

With a working knowledge of the practical and theoretical concepts of bioinformatics, you will be well qualified to progress onto advanced graduate study. The portfolio of skills developed on the programme is also suited to academic research or work within the bioinformatics industry as well as range of commercial settings.



Department of PG Studies and Research in Physics and Electronics

Programme Offered

1. M.Sc. Physics
2. M.Sc. Electronics

Master Of Science in Physics

PROGRAMME OUTCOMES

- PO-1. Critical Thinking:** Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication:** Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction:** Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship:** Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics:** Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability:** To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning:** It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

PROGRAMME SPECIFIC OUTCOMES

- PSO-1.** Students are expected to acquire deep knowledge in physics, including the major areas of classical mechanics, quantum mechanics, electromagnetism, Nuclear and particle physics, electronics, modern physics and microprocessors.
- PSO-2.** Have fundamental and advanced level knowledge in physics so as to handle the computational tools and Scientific software.
- PSO-3.** Discover of physics concepts in other disciplines such as mathematics, computer science, Non-linear dynamics, Chemistry etc.
- PSO-4.** Have necessary skills and expertise in field of research and development and be able to apply experimental expertise in basic as well as advanced areas of physics. Students will be capable of oral and written scientific communication and will prove that they can think critically and work independently

Semester-1

Paper 1 Mathematical Methods Course Outcomes

CO-1. Learn about the concept and uses of Tensors and Tensor algebra (Null tensor, addition, subtraction, inner product, outer product).

CO-2. Familiarized with different special functions like Associated Legendre Polynomials, Laguerre's Polynomials, etc. and their solutions in solving different physical problems.

CO-3. To obtain knowledge of Fourier and Laplace Transforms in solving different problems of Mechanics and Electronics etc.

CO-4. Know about Green Function and its application in solving non homogeneous differential equations.

CO-5. Solve different physical problems which contain complex variables and implementation of complex variable for calculation of integrals, and also able to expand functions in Taylor's and Laurent's series. Knowledge of theorems of residues and contour integration.

Paper 2 Classical Mechanics

Course Outcomes

CO-1. Newtonian mechanics, Virtual work, D'Alembert's principle, Formulation of Lagrangian mechanics and problem solving with the help of it. Compare the formulation of Hamiltonian and Lagrangian mechanics and solve the problems of classical and relativistic mechanics

CO-2. Generating function, canonical transformation & Poisson brackets.

CO-3. Kepler problem, Legendre Transformations, Hamilton's equation, Canonical transformations and generating functions. Properties of Poisson's bracket.

CO-4. Understanding small oscillations, Solve the equations of coupled oscillator and to examine the two coupled pendulums, and double pendulum related problems. Understanding rotating coordinate system, coriolis force and Eulerian coordinate system

CO-5. Understand space and time symmetries, covariant and four-dimensional formulation, covariant

Paper 3 Electronic Devices

Course Outcomes

CO-1. Understand working of Different Semiconductor devices like JFET, BJT, MOSFET & MESFET (Construction, Working Principles and V-I characteristics) and their applications.

CO-2. Understand photonic devices like LDR, LED and Diode Lasers along with their applications.

CO-3. Develop a comprehensive understanding of contemporary integrated circuits both saturated and unsaturated logic families like RTL, DTL, TTL, TTC, ECL etc. Operational amplifier design and applications like adder, subtractor, differentiator function generator etc.

CO-4. Develop an insight into the physics and technology that go into the development of various memory devices using semiconductors and other electronic devices using electro-acoustomagneto-optic effects. LCD. Piezoelectric effect based devices.

CO-5. Enjoy the new and stimulating ideas behind the future novel devices and also appreciate the link

Paper 4 Computational Methods And Programming

Course Outcomes

CO-1. Understand the basics of computer and BASIC programming. Estimate errors while solving equations and effectively use methods like matrix inversion, Gauss elimination and LU decomposition to solve linear equations.

CO-2. Understand the methods of linear and non-linear algebraic equations, simultaneous linear equations

CO-3. Enrich a given set of data points using interpolation methods, Newton's divided difference, etc.

CO-4. Numerically differentiate and integrate expressions and solve equations from physics.

CO-5. Enriched with various computational methods like Euler, Newton-Raphson and Runge-Kutta etc. to solve problems. Idea of random variables and Monte Carlo evaluation

Paper 5 Physics of electronics devices & fabrication of Intergrated circuits and systems

Course Outcomes

CO-1. Understand the basic concepts of various Inorganic and Organic Semiconductor materials for electronic device applications in modern electronic industry.

CO-2. Understand the carrier transport in semiconductors. Drift, Diffusion, Conductivity measurement, Direct and Indirect Band gap semiconductors.

CO-3. Analyze various junction devices: p-n junction, Schottky and MOS devices..

CO-4. Understand fabrication techniques of integrated devices such as thin film, vapor deposition, etching, lithography ,sputtering etc.

CO-5. Evaluate and understand behavior of semiconductor Electronics and their applications in design of various circuitry.

Semester-2

Paper 1 Quantum Mechanics- I

Course Outcomes

CO-1. To understand and apply principles of Quantum mechanics for understanding the physical systems in quantum realm.

CO-2. Importance of quantum mechanics compared to classical mechanics at microscopic level.

CO-3. To formulate the Heisenberg & Dirac formulation of quantum mechanics

CO-4. To solve the linear harmonic oscillator and hydrogen-like atom problems using Dirac formulation

CO-5. To demonstrate angular momentum operators associated with spherical and symmetrical systems and various tools to calculate Eigen values and total angular momentum of particles.

Paper 2 Statistical Mechanics

Course Outcomes

CO-1. To use various ensemble theories to calculate the thermodynamic properties of different systems.

CO-2. To compute properties of systems behaving as ideal Fermi gas or ideal Bose gas.

CO-3. To describe the features and examples of Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics.

CO-4. The student should be able to know Cluster expansion, Virial equation, Ising model and Landau theory.

CO-5. Understand the thermodynamic fluctuations, Langevin theory, Fokker-Planck and Onsager relations.

Paper 3 Electrodynamics and Plasma Physics

Course Outcomes

CO-1. Understand and apply the laws of electromagnetism and Maxwell's equations. Basics of electrostatics and magneto statics Solve the electric and magnetic fields problems for different configurations.

CO-2. Radiations by moving charges and retarded potentials. Fields of accelerated charged particle with different velocity. Angular distribution of radiated power. Abraham- Lorentz method.

CO-3. Understand 4 Vectors and Lorentz transformation in 4- dimensional space, relativistic transformation properties of E and H.

CO-4. Understand the plasma oscillations and its limit, Debye screening.

CO-5. Know Magneto hydrodynamic equations, magnetic diffusion, MHD flow, Pinch effect MHD waves.

Paper 4 Condensed Matter Physics

Course Outcomes

CO-1. Able to understand the X-ray diffraction and its use in crystal structure, Concept of reciprocal lattice, defects in solids and their observation.

CO-2. Able to understand the electronic properties of solids and understand the difference in the classical free electron theory, quantum free electron theory and the nearly free electron model.

CO-3. Able to understand types of polarizabilities, Hall effect and quantum hall effect. Superconductivity and high T_c superconductors.

CO-4. Able to understand ferromagnetism and its theory, Curie-Weiss law, magnetic order.

CO-5. Able to understand optical properties, Kramer-Kronig relations, cyclotron resonance, Raman effect

Paper 5 Informatics

Course Outcomes

CO-1. Use Fourier series and transformations as an aid for analyzing experimental data.

CO-2. Understand the principles of fiber optics communication in different media

CO-3. Intended to enrich the learner about transmission types, codes and communication. Modems and Transmission media.

CO-4. Introduction to UNIX/ LINUX, Programme with the C/ C++, Data types, Functions and Program structures.

CO-5. Able to know Object oriented concepts, the languages used to delivered web enabling technologies.

Semester-3

Paper 1 Quantum Mechanics – II

Course Outcomes

CO-1. Understand Approximation methods for bound states.

CO-2. Understand the Time Independent Perturbation Theory and its application.

CO-3. Understand theory of scattering, Born approximation and partial waves, Scattering by rigid sphere and spherically symmetric potential, Pauli spin matrices.

CO-4. Understand the central concept and principles of relativistic Quantum Mechanics.

CO-5. Understand Klein- Gordon equation, Dirac's relativistic equation, Zitterbewegung Dirac relativistic equation.

Paper 2 Nuclear And Particle Physics

Course Outcomes

CO-1. The method and analysis of Scattering process & understand structure and properties of nuclei, radioactive decay, and different types of nuclear reactions.

CO-2. Compare various nuclear models and properties of the nucleus & to study the nuclear structure properties.

CO-3. Various nuclear radiation detectors like Betatron and Synchrotron & describe various types of nuclear reactions and their properties.

CO-4. Nuclear decay processes and theory for beta and gamma decay.

CO-5. The nature, interaction etc. of the elementary particles and origin, nature of Cosmic rays. Bhabha-Heitler theory.

Paper 3 Condensed Matter Physics – I

Course Outcomes

CO-1. Mechanism of plastic deformation, Dislocations and their stress and strain fields, Multiplication, Dislocations in different types of lattices.

CO-2. Concept of Dislocation interaction and partial dislocations, Demonstrate techniques of microscopy for their observation. About elementary concepts of surface crystallography.

CO-3. Idea about thin films, their surface topography & electrical properties of thin films.

CO-4. Optical properties of solids, direct and indirect transitions, phonon absorption, skin effect.

CO-5. Able to define the concepts of Phonons and to understand the lattice dynamics of mono and diatomic lattices, Debye-Waller factor, Umklapp process, interaction of electron and phonons with photon.

Paper 4 Electronics - I

Course Outcomes

CO-1. Know the basic phenomenon of communication, modulation and demodulation and their types. Knowledge of microwave transmission and parameters affecting along with Satellite communication and geostationary system.

CO-2. Gain knowledge about working, design and application of microwave devices and systems. Idea of Radar and Antenna system and related parameters.

CO-3. Enrich the learner about Microwave transmission lines and waveguides. Through it students would be able to understand the propagation of microwave through transmission lines and Waveguides.

CO-4. Get knowledge of 8085 microprocessor architecture and its functioning and ability to understand and design the microcontroller and microprocessor-based systems.

CO-5. Know the principle and working concepts of Interfacing devices like 8155/8255 and 8257 DMA and 8279 systems. Methods for digital and analog conversions.

Paper 5 Materials Science – I

Course Outcomes

- CO-1. Able to qualitatively describe the bonding scheme and its general physical properties, as well as possible applications.
- CO-2. Given a binary phase diagram, what microstructures can be obtained by suitable thermal treatments? examples for near-equilibrium and far-from-equilibrium processing.
- CO-3. Able to identify phases (and their abundance), phase rule, and invariant reactions, as well as identify simple microstructures that can occur (including possible effects on mechanical response).
- CO-4. Demonstrate techniques of microscopy for investigation on the nanometer and atomic scales
- CO-5. Ability to know the basic instruments in materials science and engineering to characterize the structural properties.

Paper 6 Computational Physics – I

Course Outcomes

- CO-1. General concepts and structure of C++ programming for developing computational methods.
- CO-2. Review of instruments and related electronics used in computer controlled instrumentation. Idea of 8085 and 8086 based microcomputer system their programming and interface.
- CO-3. Computation and the evolution of phase space as various parameters are changed.
- CO-4. Solving problems related to propagation of elastic waves in solids, Phase trajectory of chaotic pendulum, Poincare section etc. Using computational techniques.
- CO-5. To explore application of computational physics in frontier areas of Electronics such as electromagnetic oscillation in LC circuit, Fourier analysis in harmonic waves, circuits having LCR, acceleration of charged particle in cyclotron etc.

Semester-4

Paper 1 Atomic and Molecular Physics

Course Outcomes

- CO-1. Able to deal with problems related to Hydrogen-like atomic spectra and alkali metals.
- CO-2. Understand coupling schemes and hyperfine structures.
- CO-3. Able to know the features of molecular quantum mechanics such as Thomas Fermi model, Hartree and Hartree-Fock methods.
- CO-4. Able to understand the basics of microwave spectroscopy with rotation of diatomic molecules.
- CO-5. Able to understand the basics of IR spectroscopy with vibrating diatomic molecules and vibrating –rotator molecule.

Paper 2 Physics of Lasers Its Applications

Course Outcomes

- CO-1. Evaluate conditions for lasing phenomenon and properties of the laser.
- CO-2. To understand various types of Lasers and their applications.
- CO-3. To know about Laser fluorescence and Raman scattering and their applications.
- CO-4. To understand the Optical fibers and use of Lasers in light wave communication along with the engineering and medical applications.
- CO-5. To understand the basics of crystal optics and propagation of light ,electro- optical effects, laser induced multiphoton processes, parametric generation, optical stability etc.

Paper 3 Nonlinear Dynamics

Course Outcomes

- CO-1. Understand basic knowledge of nonlinear dynamical systems, their equations, bifurcations, Poincare section.
- CO-2. Understand dissipative systems, noninvertible maps, attractors, intermittency, Lyapunov exponents,

Henon map and Fractals and their geometry.

CO-3. Learn skills by solving problems on solving nonlinear problems using numerical methods.

CO-4. Understand Hamiltonian Systems, Integrability, Liouville's theorem, perturbation techniques, Concept of Chaos and stochasticity.

CO-5. Understand advanced topics like Solitons, Sine Gordon and Korteweg devries, Baclund transformation, magnetic monopole and Vortex solitons.

Paper 4 Physics of Nanomaterials

Course Outcomes

CO-1. Understand concept of quantum confinement, electron confinement in deep square well and two and three dimensions, idea of quantum well, dot and wires.

CO-2. Understand quantum well and super lattices, techniques of fabrication of MQW and SL structures. Acquire knowledge of basic approaches like Bottom up and Top down to synthesize inorganic colloidal nanoparticles and their self-assembly in solution and surfaces, Physical properties of nanoparticles.

CO-3. Understand and describe the use of unique optical properties of nanoscale metallic structures using Luminescence and Raman scattering.

CO-4. Understand electrical properties, magnetic materials and stability of nano structures, Various applications and perspectives of nanotechnology in the development of value-added new products and devices.

Paper 5 Condensed Matter Physics – II

Course Outcomes

CO-1. Able to differentiate between type-I and type-II superconductors and their theories and explain the behavior of superconductors, applications and high temperature superconductivity.

CO-2. Understand the point defects, shallow impurity states and color centers.

CO-3. Understand structure and symmetries of liquid crystals, quasi crystals, Penrose lattice.

CO-4. Understand the physical and chemical properties of carbon nanotubes, methods of synthesis of nano structures, quantum size effect.

CO-5. Understand the crystalline, non- crystalline materials, disorder in condensed matter, atomic correlation, glasses and liquids, Anderson model, and amorphous semiconductors

Paper 6 Electronics – II

Course Outcomes

CO-1. Understand digital communication systems such as PM, PAM, PCM, Delta modulations.

CO-2. Understand digital modulation techniques like BPSK, DPSK, QPSK, PSK FSK etc.

CO-3. Understand noise in pulse code and delta modulation systems, various noise parameters, signal to noise ratio.

CO-4. Understand computer communication systems, types of networks, design of networks, mobile and satellite network.

CO-5. Understand 8086 architecture and functioning, its assembly language programming, 8086 connection timings, Interrupts, digital and analog interfacing, elementary idea of Pentium processors

Paper 7 Materials Science – II

Course Outcomes

CO-1. To understand various mechanical properties and mechanism responsible for it. Failure of materials.

CO-2. To understand the dielectric behavior and polarization mechanism of materials.

CO-3. To understand the Polymer electrets and their applications, mechanism like Poole Frenkel, Richardson Schottky, tunneling and hopping inside the materials.

CO-4. To understand piezo, pyro, and ferro electric materials and their applications, to know about thin films, their deposition techniques, and electrical conduction, their magnetic and optical properties.

CO-5. To understand ceramics, glasses, and modern materials, their preparation and applications, modern materials like, liquid and quasi crystals, fullerenes, GMR materials, composite materials, bio polymers and conducting polymers.

Paper 8 Computational Physics – II

Course Outcomes

- CO-1. Get a wide knowledge of Mathematica programming, its commands, numerical calculations like Factorial, exponential etc. Factorial, exponential & polynomials, Plots of data functions.
- CO-2. To solve quantum mechanical problems in computational methods, like Schrodinger equations
- CO-3. Solve propagation of free waves and through one dimensional well.
- CO-4. Use computational methods to simulate phonon dispersion, density of states, two dimensional free electrons.
- CO-5. Use simulation techniques to solve molecular dynamics with random oscillations, Monte Carlo and Ising model, magnetic susceptibility.

M. Sc. Electronics

PROGRAMME OUTCOMES

- PO-1. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction: Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship: Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics: Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability: To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning: It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

Programme Specific Outcomes

- PSO-1. Students are expected to acquire deep knowledge of electronics to design a variety of components and systems for applications including signal processing, image processing, communication, networking, embedded systems, VLSI and control system.
- PSO-2. Have fundamental and advanced level knowledge in Electronics so as to handle the computational tools and Scientific software.
- PSO-3. Select and apply cutting-edge engineering hardware and software tools to solve complex Electronics and Communication Electronics problems.
- PSO-4. Have necessary skills and expertise in field of research and development and be able to apply experimental expertise in basic as well as advanced areas of Electronics.

Semester-1

Paper 1 Electromagnetic Fields And Waves

Course Outcomes

- CO-1. About basic phenomenon like electric field intensity, Gauss law and its applications, Divergence theorem etc.
- CO-2. To obtain knowledge of boundary value problems and obtain their solution using keys like Laplace's and Poisson's equations, Biot Savart law, Stokes theorem, Scalar and magnetic vector potential and multi pole expansion.
- CO-3. To understand Maxwell's equations, their integral form and uniform plane wave, basic knowledge about groups and types, skin effect and standing wave ratio.

CO-4. To obtain information about Transmission lines and electromagnetic radiations for accelerated charge and angular distribution of power radiation.

CO-5. To develop an understanding of relativistic electrodynamics by discussing transformation properties, Four vector and Lagrangian and Hamiltonian.

Paper 2 Properties Of Electronic Materials

Course Outcomes

CO-1. Conductivity, reflection and absorption properties, dielectric constant and polarizability, phase transition, piezoelectricity.

CO-2. Optical constant and their physical significance, Kramer kronig relations, colour of material, properties of nano materials.

CO-3. Various theories related to types of magnetism, adiabatic demagnetization, magnetic domains.

CO-4. Electron and hole transport in semiconductor, experimental methods to study the electrical parameters, intrinsic and extrinsic semiconductors.

CO-5. Construction and working of semiconductor devices, JFET, MOSFET, negative conductance devices, IMPATT and TRAPATT and quantum well structure.

Paper 3 Signals And Systems

Course Outcomes

CO-1. Discuss the signal models, types, and functions, representation of systems, properties, stability and impulse response of a fixed linear system.

CO-2. Develop a comprehensive understanding of Fourier series and Transforms, Transfer functions, distortion less systems, Frequency translation, modulation, convolution etc., window functions and Gibbs phenomenon.

CO-3. Develop an insight into Laplace transform, various theorems related to transform of derivatives, integral, Laplace transform of convolution of two signals, network theorems (Thevenin and Norton's), Loop and node analysis.

CO-4. To understand and apply transfer function and frequency response of system for linear lumped stable systems, asymptotic and marginal stability, RouthHurwitz criterion, Bode plots etc.

CO-5. Evaluate and understand the behavior of discrete time signals and systems, analog to digital conversion, state variable concept, Frequency domain solution of state equations for discrete time systems, related examples, inverse Z transformation by the immersion signal.

Paper 4 Computational Methods in Electronics

Course Outcomes

CO-1. Know the various operating systems like DOS, OSII, GUI in general also multitasking UNIXshell, text processing in UNIX environment.

CO-2. Aware the elementary idea about compilers, interpreters, assignments and functions.

CO-3. Understand the iterative methods, Matrix inversion, Eigen values and Eigen vectors of matrices.

CO-4. Enriched with numerical solution of ordinary Differential Equation, predictor and corrector methods.

CO-5. Understand the basic of oscillations in LC, RC and LCR circuits, Harmonic waves, charging and discharging incircuit with inductor capacitor and registers.

Paper 5 Digital Design And Applications

Course Outcomes

CO-1. Have an idea about number systems, logic gate characteristics and construction. Working and characteristics of logic families for several applications.

CO-2. Numerically understand the Boolean Algebra, simplification of K- map and applications designing of various devices.

CO-3. Analyze various arithmetic circuits like Half adder, digital comparator, parity generator/ checker etc.

CO-4. Understand fabrication techniques of sequential circuits like flip flop counters and types.

CO-5. Evaluate and understand behaviour of shift registers and their types and applicability in electronic circuits.

Paper 1 Analog and Digital Circuits

Course Outcomes

- CO-1. Understand the construction and working of Operational Amplifier including all parameters and specifications.
- CO-2. Know the linear applications of Operational Amplifier and general idea about instrumentation amplifier and filters.
- CO-3. Discuss and analyze the nonlinear applications of OP-AMP in the form of various devices.
- CO-4. Formulate the Boolean functions, simplification of k map and generalization of combinational circuits
- CO-5. Discuss the synchronous sequential machines, Mealy and Moore model machines, state table and transition diagram etc.

Paper 2 Optical and Quantum Electronics

Course Outcomes

- CO-1. To know the general mechanism of photoconductivity devices like photodetectors, phototransducer, photomultiplier tubes, impulse and frequency response etc.
- CO-2. Know the mechanism of Luminescence, various models like configuration, coordinate and energy band model.
- CO-3. To understand the outcomes of various effects discuss the mechanism related with laser.
- CO-4. To understand the construction and working of types of LASER. Q switching.
- CO-5. Understand the various applications of laser and applicability of nonlinear optics.

Paper 3 Network Analysis and Synthesis

Course Outcomes

- CO-1. Understand the star and delta conversion, source transformation. Mesh and node analysis of electric circuits and network theorems.
- CO-2. Know the coupled circuit's waveform, synthesis using functions their types and concept of network graph and network transformation.
- CO-3. To explore application of network functions and time domain behaviour from the plots and understand the Nyquist stability criterion.
- CO-4. To gain knowledge on two port network analysis with the use of parameters and their relationship.
- CO-5. Solve the problems related with network synthesis by LCR and R-C causers forms

Paper 4 Microprocessor and Object Oriented Programming

Course Outcomes

- CO-1. Microprocessor architecture and its operation, memory interfacing, writing assembly language programs.
- CO-2. Basic interfacing concepts, interfacing about displays and input devices and Programmable interrupt.
- CO-3. Pin description, operation modes of resistors and internal architecture of 8086 and 8088 microprocessor, segment register and memory segmentation.
- CO-4. Instruction set of 8085/8086 various data transfer instructions.
- CO-5. Introduction to C++ and object-oriented programming, data Hiding and encapsulation, stack and queues.

Paper 5 Microwave Electronics

Course Outcomes

- CO-1. Learn about the concept and uses of Microwave, generation of microwave by conventional vacuum tube.
- CO-2. Know about bipolar and field effect transistor, gun oscillator and IMPATT and TRAPTT mode of operation.
- CO-3. To obtain the basic knowledge of integrated circuit design, substrate materials, conductor and dielectric.
- CO-4. To impart understanding of waveguide, Impedance Matching, element, tees and magic tees.
- CO-5. Develop a comprehensive understanding of microwave measurement techniques and devices.

Semester-3

Paper 1 Integrated Circuit Technology

Course Outcomes

- CO-1. **Purification** : Different techniques, redistribution of dopants and oxidation, induced defects ,general idea of diffusion mechanism.
- CO-2. The method of metallization, selectivity and control rate of etch rate and edge profile.
- CO-3. Basic Monolithic integrated circuits, layout making and etching, packing and characteristics of integrated circuit components.
- CO-4. Construction and characteristics of Differential and Operational amplifier, calculation of Operational Amplifier parameters, slew rate and methods of improvising slew rate.

CO-5. Op-Amp working modes, linear and nonlinear circuits using Operational Amplifier and their analysis.

Paper 2 Microwave And Digital Communications

Course Outcomes

- CO-1. Ground space wave, Sky wave propagation, advantage and disadvantage of microwave transmission satellite system etc.
- CO-2. Principle and operation of klystron, magnetrons travelling wavetube Impatt diode. Gun & Trapatt diode.
- CO-3. Microwave system, repeater system, microwave antennas, Radar system and Satellite system.
- CO-4. Pulse modulation system, sampling, Companding noise in system and various types of modulation.
- CO-5. Various digital modulation techniques including BPSK, DPSK, QPSK, QASK and BFSK, internet and ATM network, Bluetooth and mobile computing

Paper 3 Control Systems

Course Outcomes

- CO-1. Familiarized with the loop control Servo mechanism mathematical methods of physical system.
- CO-2. Standard test signals, types of feedback, control system, design specification, effect of adding a system zero to a system.
- CO-3. Routh- Hurwitz stability criterion, Routh array construction rules, all pass and minimum phase systems.
- CO-4. Stability criterion assessment of relative stability gain margin and phase margin closed-loop frequency response.
- CO-5. The design problem tuning of PID controller feedback compensation behaviour of nonlinear system, phase plane method, general idea of analysis.

Paper 4 Electronics Instrumentation & Measurements

Course Outcomes

- CO-1. Able to understand the concept of measuring concept of measurement error in measurement type of errors specification and testing of dynamic response.
- CO-2. Able to know the working types and characteristics of transducers, measurement of velocity, force, strength, speed, flow, humidity and thickness etc.
- CO-3. Understand the principle working and basic characteristics of digital instruments like DC amplifier isolation amplifiers and Signal Processing circuits i.e., peak detectors, RMS converter UPS.
- CO-4. Acquire knowledge of basic approaches of Advanced measuring instruments like digital multimeter frequency metre and electrometer etc.
- CO-5. Understand and describe the use of Biomedical electronic instruments and measurements like biochemical transducers cardiovascular and pacemakers.

Paper 5 VHDL

Course Outcomes

- CO-1. Know hardware abstraction, entity declaration, configuration and package declaration.
- CO-2. Understand the operators identifiers resolution functions.
- CO-3. Get familiarized with modeling state, behavioral modeling and data flow modeling etc.
- CO-4. Explain why configuration architecture configuration subprograms and overloading.
- CO-5. Discuss read-only memory and Programmable Logic devices.

Semester-4

Paper 1 Microcontroller And Embedded Systems

Course Outcomes

- CO-1. Understand architecture, specialties applications of embedded system, examples and categories of embedded systems challenges and issue in embedded software, memory advance hardware, etc
- CO-2. Gain knowledge about Assembly language programming, concept of arithmetic and logic instructions jump loop and call instructions
- CO-3. To understand architecture internal structure programming and addressing modes board controller 8279, interfacing of 8-bit A/D and D/ A converters.
- CO-4. To know interrupt programming types of interrupt, Stepper Motors, traffic light control system with software development.
- CO-5. To able to know registers, resistor file structure, features of a RISC and CISC architecture, comparison

and advantages.

Paper 2 Cellular And Satellite Communication

Course Outcomes

- CO-1.** Understand basic knowledge of mobile and personal computers instrumentation for lab testing
- CO-2.** Learn skills by solving problems on pseudo noise sequence, hopping systems, carrier to noise and carrier to interference ratio.
- CO-3.** Know specialized MAC multiple access with collision avoidance and mobile services
- CO-4.** Understand principle of satellite communication, satellite link module handover, Earth station configuration etc.
- CO-5.** Illustrate condition of INTELSAT, VSAT, MAST, lower earth orbit satellite personal communication networks.

Paper 3 Digital Signal Processing

Course Outcomes

- CO-1.** The digital signals and their processing, sampling of continuous time signals Z transform of finite length sequence, right side left sided and both sided multiplication and convolution of sequences.
- CO-2.** Representation of periodic sequences, sampling the z transform, linear convolution using DFT, general introduction of FFT, Goertzel algorithm, FFT with different radix.
- CO-3.** Metric representation of digital networks, networks for linear phase FIR systems, parameter quantization effects.
- CO-4.** Design examples of digital filters using impulse invariance and bilinear transformations, computer-aided design of IIR digital filters, properties of FIR/nonrecursive digital filters comparison of IIR and FIR filters.
- CO-5.** Speech signals, analysis, compression and coding voice privacy application to radar and image processing continuous discrete wavelet transform.

Paper 4 Internet, Web Technology And Management

Course Outcomes

- CO-1.** Understand the network system, Topology, Modems Routers Gateways.
- CO-2.** Evaluate the server and client connectivity, world-wide-web(www), FTP and Telnet, ATM virtual and private networks.
- CO-3.** Understand Ethernet basics, Token passing protocols, Netware protocols, NOVEL Netware, simple network management protocol.
- CO-4.** Know the mechanism and features of URL's, DHTML, JAVA scripts interpreter plug-ins protocols.
- CO-5.** Analyze and discuss simple JavaScript and HTML, active page, working with images working in Frames the JAVA Script URL.

Paper 5 Nano-Electronics

Course Outcomes

- CO-1.** Understand the emergence of NanoTechnology, concept of quantum confinement, top-down and bottom-up approaches for preparation of Nano structures.
- CO-2.** Know the tunneling structure, modulation doping of heterostructures, carrier excitation dynamics, ballistic transport, spintronics.
- CO-3.** Learn about various of heterojunctions FETs, three terminal electronic devices, multiple QW laser.
- CO-4.** Understand Nano grained structure, polymer nanocrystals. AC power electroluminescence and display devices.
- CO-5.** Illustrate doping of Si oxidation of silicon, methods of organic layers in BIOMEMS, Plasma sputtering.



University Institute of Management

Programme Offered

1. B.Com. (Hons)
2. M.B.A. (Marketing Management)
3. M.B.A. (Core Subjects)

B.Com. (Hons)

PROGRAMME OUTCOMES

- PO-1.** Graduates should be able to do creative research and develop new technologies in the field of biotechnology, which can contribute to the industry and to academia.
- PO-2.** Graduates should be able to practice biotechnology engineering in a responsible, professional and ethical manner and implement eco-friendly sustainable technologies for the benefit of industry as well as society.
- PO-3.** Graduates obtain position in successful career in industry, research institutions, academic, government organizations and entrepreneurship.
- PO-4.** Graduates to be professionally competent in biotechnology to solve the problems in environmental, food, biochemical and biomedical engineering.
- PO-5.** Graduate to be able to interact with their peers in industry and society as engineering professionals and leaders to set up technical ambience in the society.

Semester-1

Paper 1 F.C.I (Moral Values & Languages)

Course Outcomes

Students will gain knowledge on the following topics:-

- CO-1. Moral values and language
- CO-2. Learning from context
- CO-3. Language skills

Paper 2 F.C.II (Development of Entrepreneurship)

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Entrepreneurship
- CO-2. Motivation
- CO-3. Project report evaluation
- CO-4. Economic management
- CO-5. Production management
- CO-6. Regulatory institutions

Paper 3 Environmental Studies

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Ecosystem
- CO-2. Natural resources
- CO-3. Biodiversity
- CO-4. Environmental pollution
- CO-5. Social issue related to environment

Paper 4 Financial Accounting

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Accounting
- CO-2. Final accounts
- CO-3. Hire purchase
- CO-4. Branch Accounting
- CO-5. Department Accounting
- CO-6. Partnership Accounting

Paper 5 Business Law

Course Outcomes

CO-1. Students will gain knowledge on the following topics: -

- CO-2. Indian Contract Act 1872
 - Types of agreement and contract
 - Specific Contracts
 - Sale of Good Act
 - Partnership laws
 - Negotiable instrument sAct

Paper 6 Business Organisations

Course Outcomes

Students will gain knowledge on the following topics:-

- CO-1. Concept of business
- CO-2. Forms of business organization
- CO-3. Choice of form of organization
- CO-4. Plant location
- CO-5. Business combination

Paper 7 Micro Economics

Course Outcomes

Students will gain knowledge on the following topics:-

- CO-1. Concept of business
- CO-2. Forms of business organization
- CO-3. Choice of form of organization
- CO-4. Plant location
- CO-5. Business combination

Semester-2

Paper 1 F.C.I (Moral Values & Language)

Course Outcomes

Students will gain knowledge on the following topics: -

Moral values and language

- CO-1. Language skills
- CO-2. Reading skills
- CO-3. Grammar and usage

Paper 2 F.C. II (Development of Entrepreneurship)

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Entrepreneurship
- CO-2. Motivation
- CO-3. Communication skills
- CO-4. Project report evaluation
- CO-5. Forms of organization

Paper 3 Business Communication

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Communication
- CO-2. Business Correspondence
- CO-3. Report writing business report
- CO-4. Effective listening
- CO-5. Vocabulary

Paper 4 Management Principles and Application

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Managerial functions
- CO-2. Detail study of
 1. Planning
 2. Organizing
 3. Staffing
 4. Leading
 5. Controlling

Paper 5 Corporate Laws

Course Outcomes

Students will gain knowledge on the following topics: -•

Study on Company

- CO-1. Documents study–
 1. Memorandum of association
 2. Article of association
 3. Doctrine of constructive notice
- CO-2. Management
- CO-3. Dividend
- CO-4. Audit

Paper 6 Business Statistics

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Statistics introduction
- CO-2. Measure of Central Tendency
- CO-3. Measure of variation
- CO-4. Correlation analysis
- CO-5. Index number

Semester-3

Paper 1 F.C.I (Moral Values & Language)

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Moral values and language
- CO-2. Language skills
- CO-3. Grammar

Paper 2 F.C. II (Environmental Studies)

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Environmental study
- CO-2.** Environmental pollution
- CO-3.** Nature conservation by mankind as-

1. Sustainable development
2. Energy problem
3. Water conservation
4. Food resources
5. Energy resources

- Environmental conservation laws

Paper 3 Business Mathematics

Course Outcomes

Students will gain knowledge on the following topics :-

- CO-1.** Equations in two variables
- CO-2.** Arithmetic mathematics –
 - a) Percentage
 - b) Profit and loss
 - c) Ratio and proportion
 - d) Commission
 - e) Interest
- CO-3.** Logarithms and antilogarithms

Paper 4 Income Tax law & Practice

Course Outcomes

Students will gain knowledge on the following topics; -

- CO-1.** Introduction to Income tax Act
- CO-2.** Income from salary
- CO-3.** Income from house property
- CO-4.** Set off and carry forward
- CO-5.** Assessment procedure

Paper 5 Human Resource Management

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Human resource management
- CO-2.** Acquisition of human resource
- CO-3.** Training and development
- CO-4.** Performance appraisal
- CO-5.** Maintenance

Paper 6 Macro Economics

Course Outcomes

Students will gain knowledge on the following topics :-

- CO-1.** Introduction to Macro economics
- CO-2.** Economy
- CO-3.** Inflation
- CO-4.** Open economy
- CO-5.** Investment

Paper 7 E-Commerce

Course Outcomes

Students will gain knowledge on the following topics :-

- CO-1.** Introduction to E Commerce
- CO-2.** Online business –
 1. Planning

2. Technology
3. Mechanism
4. Application

Semester-4

Paper 1 F.C.I (Moral Values & Language)

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Moral values and language
- CO-2.** Narrative skills
- CO-3.** Grammar

Paper 2 F.C. II (Environmental Studies)

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Problem on natural resources –
 1. Water resources
 2. Forest resources
 3. Land resources
- CO-2.** Biodiversity
- CO-3.** Human pollution effect on environment
- CO-4.** Ecology
- CO-5.** Ecosystem

Paper 3 Indirect Tax

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Knowledge on -
 1. Central excise duty
 2. Custom duty
 3. Central sales tax
 4. MP Value added tax
 5. Service Tax

Paper 4 Corporate Accounting

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Accounting for share capital
- CO-2.** Final accounts
- CO-3.** Valuation of Goodwill
- CO-4.** Valuation of Shares
- CO-5.** Amalgamation

Paper 5 Indian Economy Performance and Policies.

Course Outcomes

Students will gain knowledge on the following topics: &

- CO-1.** Issue in economic development
- CO-2.** Features of Indian economy
- CO-3.** Policy regime
- CO-4.** Growth and development
- CO-5.** Structural Change

Paper 6 Entrepreneurship

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Entrepreneurship

- CO-2. Enterprise
- CO-3. Finance
- CO-4. Source of business ideas
- CO-5. Women entrepreneurship

Semester-5

Paper 1 F.C.I(Moral Values & Language)

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Moral values and language
- CO-2. Writing skills
- CO-3. Grammar

Paper 2 F.C.II(Basics of computer & Information Technology-I)

Course Outcomes

Students will gain knowledge on the following topics; -

- CO-1. Introduction to Computer
- CO-2. Types of computing device
- CO-3. Memory
- CO-4. Peripheral devices
- CO-5. Storage devices

Paper 3 Cost Accounting

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Cost
- CO-2. Cost accounting
- CO-3. Unit costing
- CO-4. Process costing
- CO-5. Contract costing

Paper 4 Principles of Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Concept of marketing
- CO-2. Market selection
- CO-3. Market segmentation
- CO-4. 4P's –
 1. Product
 2. Price
 3. Promotion
 4. Place
- CO-5. Distribution

Paper 5 Financial Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Business finance
- CO-2. Capitalization
- CO-3. Time value of money
- CO-4. Cost of capital
- CO-5. Working capital management

Paper 6 Computer app. In Business

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Word processing
- CO-2. Presentation
- CO-3. Spreadsheet and business
- CO-4. Database management system

Paper 7 Fin. Markets inst.& fin. serv.

Course Outcomes

Students will gain knowledge on the following topics –

- CO-. Introduction to Financial system
 - 1. Financial markets
 - 2. Financial institutions
 - 3. Financial services industry
 - 4. Leasing and higher purchase

Paper 8 Corporate Tax Planning

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Tax planning with reference to: -
 - 1. Management
 - 2. Evasion
 - 3. Set new business
 - 4. Specific management
 - 5. Employees
 - 6. Amalgamation
- CO-2. Special provisions

Paper 9 Advertising

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Introduction to Advertising
- CO-2. Media decision
- CO-3. Mortgage development
- CO-4. Measuring advertising
- CO-5. Advertising agency

Paper 10 Organisational Behaviour

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Organisational behaviour
- CO-2. Group decision making
- CO-3. Motivation
- CO-4. Leadership
- CO-5. Organisational culture

Semester-6

Paper 1 F.C.I(Moral Values & Language)

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Moral values and language
- CO-2. Translation skills
- CO-3. Grammar

Paper 2 F.C.II(Basics of computer & Information Technology-II)

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. PowerPoint

1. Creating slides
2. Working with slides
3. Formatting slides
4. Printing slides
5. Inserting slides
6. Connecting slides

CO-2. Ms Excel

CO-3. Internet

CO-4. Web services

CO-5. Cyber ethics

Paper 3 Auditing

Course Outcomes

Students will gain knowledge on the following topics: -

Auditing introduction

CO-1. Audit process

CO-2. Internal check system

CO-3. Vouching

CO-4. Company audit

CO-5. Investigation

Paper 4 Research Methodology

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Introduction to research

CO-2. Selection process

CO-3. Formulation of research problem

CO-4. Hypotheses

CO-5. Data collection

Paper 4 Fundamentals of Investment

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Investment environment

CO-2. Fixed income securities

CO-3. Equity analysis

CO-4. Portfolio analysis

CO-5. Investor protection

Paper 5 Business tax Pro. & Mang.

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Advance tax payment

CO-2. Assessment

CO-3. Appeal

CO-4. Penalties

CO-5. Different transaction types

Paper 6 International Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. International marketing

CO-2. Business environment

CO-3. Product decisions

CO-4. Promotion

CO-5. Export finance

Paper 7 Consumer Affairs and Custom. Care

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Consumer and markets
- CO-2. Consumer protection act 1986
- CO-3. Consumer protection in India
- CO-4. Competition Act 2002

M.B.A. (Marketing Management)

Semester-1

- PO-1. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction: Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship: Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics: Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability: To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning: It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

Paper 1 Organisational Behaviour

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. An understanding of the individual and group behaviour both-1. Inside the organisation
2. Outside the organisation.
- CO-2. Skill enhancement for increasing the effectiveness in –1. Understanding Individuals
2. Appreciating Individuals
3. Interpersonal Process
4. Group process.

Paper 2 Principles & Practices of Management

Students will gain knowledge on the following topics: -

- CO-1. Basic concepts of Management.
- CO-2. Students to gain appreciation field of management for -1) Emerging ideas of Management.
2) Techniques.
3) Procedure and Practices.

Paper 3 Accounting for Managers

Students will gain knowledge on the following topics: -

- CO-1. Equip with basic knowledge of –1. Accounting Principles
2. Accounting Conventions
3. Accounting Concepts.
- CO-2. Awareness of –
1. Financial reporting system.
2. Techniques of financial analyzing.
- CO-3. Managerial decision making and control.

Paper 4 Managerial Economics

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Equip with the Analytical Tools of Economics and application of the same
- CO-2. Develop Economic way of dealing with practical business problems and challenges

Paper 5 Computer Application in Management

Course Outcomes

Students will gain knowledge on the following topics; -

- CO-1. Familiarize with Hardware and Software Application
- CO-2. Data and File Management and it's share through Internet

Paper 6 Quantitative Techniques for Managers

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Basic Statistical tools and techniques
- CO-2. Application of the above in
 1. Business decision making process
 2. Management of the organization both inside and outside

Paper 7 Legal Aspects of Business

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Exposure towards Mercantile Law
- CO-2. Basic knowledge of Company Law

Paper 8 Economic Environment of Business

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Acquaint knowledge towards overall business environment within which organization functions.
- CO-2. Application of the above for decision making in organization.

Semester-2

Paper 1 Human Resource Management

Course Outcomes

Students will gain knowledge on the following topics; -

- CO-1. Management of People in terms of
 1. Knowledge
 2. Skills
 3. Competencies

Along with the organisation asset as

1. Capital
 2. Material
 3. Information
 4. Knowledge
- CO-2. Effectiveness of Human Resource Management wrt
 1. Perception
 2. Assumption
 3. Belief

Paper 2 Corporate Finance

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Conceptual framework of Finance
- CO-2. Acquaint for Financial Decisions the
 1. Tools of financial management

2. Techniques of financial management
3. Process of financial management

Paper 3 Marketing Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO- Management of Marketing Operations to promote it's

1. Understanding
2. Concepts
3. Process
4. Philosophies
5. Techniques

Paper 4 Production and Operation Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Explore the interrelationship between Operation and Supply Chain Management

CO-2. Provision of the concepts and solutions in

1. Design of supply chain
2. Operation of supply chain
3. Control of supply chain
4. Management of supply chain

Paper 5 Business Research Methodology

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Equip with Philosophy as well as Practical Aspect of research

CO-2. Insight about various research concepts for dealing various business decision situation

Paper 6 Managerial Communication

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Personality development of the learner

CO-2. Acquaint with the following to transform communication abilities

1. Fundamentals of Communication
2. Learning various forms of communication

Paper 7 Management Science

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Application of mathematical tools and techniques

CO-2. Application of research tools and techniques

Paper 8 Retail Management

Course Outcomes

Students will gain knowledge on the following topics –

CO-1. Fundamentals of Retail business

CO-2. Exposure to multi dimensions of field

CO-3. Provide insight of the emerging Retail World.

Semester-3

Paper 1 Entrepreneurship Management

Course Outcomes

Students will gain knowledge on the following topics –

CO-1. Overview of an entrepreneur

CO-2. Competencies in relation to becoming an entrepreneur

CO-3. Aims to the following in relation to a new venture:

1. Challenges
2. Investigate
3. Understand
4. Internalize

Paper 2 Business Ethics and Corporate Governance

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Create mindset among future managers.

CO-2. Ensure with core aspirations of all humans i.e. happiness and prosperity

Paper 3 Sales & Distribution Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Theory of managing sales

CO-2. Practice of managing sales

CO-3. Inculcate personal selling skills

Paper 4 Advertising and Brand Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Acquaint with

1. Concepts of advertising program
2. Techniques for developing advertising program
3. Application for effective advertising program

Paper 4 Consumer Behaviour And Market Research

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Understanding about consumer decision making process

CO-2. Application of consumer decision making process

CO-3. Marketing functions

Paper 5 Marketing Strategies

Course Outcomes

Students will gain knowledge on the following topics: -

CO-. Understanding of Marketing Strategy

Paper 6 Event Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Understanding of Event Marketing

Paper 7 Supply Chain Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Understanding of supply chain management

Paper 8 Strategic Brand Management

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Introduction to approaches to brand equity.
- CO-2. Conceptual framework for providing brand strategically
- CO-3. Emphasize on –
 1. Role of brands
 2. Concept of brand equity
 3. Advantages of creating strong brands
- CO-4. Provide insight to create profitable brand strategies
- CO-5. Measuring and managing brand equity

Paper 9 Customer Relationship Management

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Concepts of CRM Paradigm
- CO-2. Emphasize CRM as business strategy
- CO-3. Highlight appropriate business process
- CO-4. Technology management capabilities
- CO-5. Managing customer relationship

Semester-4

Paper 1 Strategic Management

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Incorporate strategic management concept
- CO-2. Providing academic training
- CO-3. Giving a global vision through general business policies

Paper 2 International Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Conceptual knowledge on marketing management
 1. Problems
 2. Techniques
 3. Strategies
- CO-2. Incorporate Marketing Concepts

Paper 3 Rural and Industrial Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Concept of industrial marketing
- CO-2. Developing sound marketing policies

Paper 4 Marketing of Service

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1. Understanding of service and service marketing
- CO-2. Emphasis on aspects of service marketing

Paper 5 Managements of Public Relation Communication

Course Outcomes

Students will gain knowledge on the following topics: -

- CO. Understanding of public relations concept

Paper 6 Marketing Models

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Understanding of Marketing models

Paper 7 Logistic Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Understanding of logistic management

Paper 8 E-Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Marketing concept in electronic marketing context

CO-2. Insight into aspects of E Marketing

Paper 9 Tourism Marketing -II

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Understanding of Marketing in relation to Tourism

CO-2. Overview of marketing strategy in context to Tourism

M.B.A. (Core Subjects)

Paper 1 Organisational Behaviour

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. An understanding of the individual and group behaviour

both-1. Inside the organisation

2. Outside the organisation.

CO-2. Skill enhancement for increasing the effectiveness in –1. Understanding Individuals

2. Appreciating Individuals

3. Interpersonal Process

4. Group process.

Paper 2 Principles & Practices of Management

Course Outcomes

Students will gain knowledge on the following topics.: -

CO-1. Basic concepts of Management.

CO-2. Students to gain appreciation field of management for -1) Emerging ideas of Management.

2) Techniques.

3) Procedure and Practices.

Paper 3 Accounting for Managers

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Equip with basic knowledge of –1. Accounting Principles 2. Accounting Conventions 3. Accounting Concepts.

CO-2. Awareness of –

1. Financial reporting system.
 2. Techniques of financial analyzing.
- CO-3.** Managerial decision making and control.

Paper 4 Managerial Economics

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Equip with the Analytical Tools of Economics and application of the same
- CO-2.** Develop Economic way of dealing with practical business problems and challenges

Paper 5 Computer Application in Management

Course Outcomes

Students will gain knowledge on the following topics; -

- CO-1.** Familiarize with Hardware and Software Application
- CO-2.** Data and File Management and it's share through Internet

Paper 6 Quantitative Techniques for Managers

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Basic Statistical tools and techniques
- CO-2.** Application of the above in
 1. Business decision making process
 2. Management of the organization both inside and outside

Paper 7 Legal Aspects of Business

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Exposure towards Mercantile Law
- CO-2.** Basic knowledge of Company Law

Paper 8 Economic Environment of Business

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Acquaint knowledge towards overall business environment within which organization functions.
- CO-2.** Application of the above for decision making in organization.

Semester-2

Paper 1 Human Resource Management

Course Outcomes

Students will gain knowledge on the following topics; -

- CO-1.** Management of People in terms of
 1. Knowledge
 2. Skills
 3. Competencies
- CO-2.** Along with the organisation asset as
 1. Capital
 2. Material
 3. Information
 4. Knowledge
- CO-3.** Effectiveness of Human Resource Management wrt
 1. Perception
 2. Assumption
 3. Belief

Paper 2 Corporate Finance

Students will gain knowledge on the following topics: -

- CO-1.** Conceptual framework of Finance
- CO-2.** Acquaint for Financial Decisions the
 1. Tools of financial management
 2. Techniques of financial management
 3. Process of financial management

Paper 3 Marketing Mangement

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Management of Marketing Operations to promote it's

- 1.Understanding
- 2.Concepts
- 3.Process
- 4.Philosophies
- 5.Techniques

Paper 4 Production and Operation Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Explore the interrelationship between Operation and Supply Chain Management

CO-2. Provision of the concept s and

- 3.Control of supply chain
- 4.Management of supply chain

Paper 5 Business Research Methodology

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Equip with Philosophy as well as Practical Aspect of research

CO-2. Insight about various research concepts for dealing various business decision situation

Paper 6 Managerial Communication

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Personality development of the learner

CO-2. Acquaint with the following to transform communication

abilities1.Fundamentals of Communication

- 2.Learning various forms of communication

Paper 7 Management Science

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Application of mathematical tools and techniques

CO-2. Application of research tools and techniques

Paper 8 Retail Management

Course Outcomes

Students will gain knowledge on the following topics –

CO-1. Fundamentals of Retail business

CO-2. Exposure to multi dimensions of field

CO-3. Provide insight of the emerging Retail World.

Semester-3

Paper 1 Entrepreneurship Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Basics of an Entrepreneur

CO-2. Acquainting with challenges of starting new ventures

CO-3. The process of setting up a business as

1. To investigate
2. To understand

3. To internalize

Paper 2 Ethics and Corporate Governance

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Creating valuable mindset of the learners
- CO-2.** Appreciation of essential complementarity between Values and Skills

Paper 3 Organisational Development

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Theoretical as well as Practical understanding of the subject
- CO-2.** Be ready and adopt the dynamic changing environment

Paper 3 Industrial Psychology

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Theoretical as well as Practical understanding of the subject
- CO-2.** Be ready and adopt the dynamic changing environment

Paper 4 Industrial Relations and Labour Welfare

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Awareness about aspects of Industrial Relations
- CO-2.** Equip the learners to deal with the subject with
 1. Objectivity
 2. Understandings

Paper 5 Management of Financial Institutions and Services

Course Outcomes

Students will gain knowledge on the following topics: -

- CO.** Familiarizing the learners with
 1. Objectives of financial services
 2. Strategies of financial services
 3. Policies of financial services
 4. Practices of financial services

Paper 6 International Financial Management

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Familiarize with international financial environment
- CO.** Decision variables emphasizing on finance function on MNCs.

Paper 7 Tax Planning and Management

Course Outcomes

Students will gain knowledge on the following topics: -

1. Basic knowledge about the following concepts in relation to tax
2. Principles of business tax
3. Problems
4. Structure of different business taxes
5. Relevance in business decision

Paper 8 Distribution Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Theoretical and practical knowledge of

1. Managing Sales
2. Inculcate personal selling skills

Paper 9 Advertising and Brand Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Acquaint the learners with the subject with respect to

1. Concepts
2. Techniques
3. Experience in applications

Paper 10 Consumer Behaviour And Market Research

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Theoretical and practical approach to Consumer decision making process

Paper 11 Business Decision & Management Systems

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Providing learners, the knowledge of Information System as in

1. Tools and techniques
2. Planning
3. Analyzing
4. Designing
5. Implementing
6. Maintaining

Paper 12 Data Base Management and Integrity

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Make students attain certain level of expertise in creating and handling database

Paper 13 Data Communication & Network

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Detailed discussion of Computer Network and Network Models

Semester-4

Paper 1 Strategic Management

Course Outcomes

Students will gain knowledge on the following topics: -

- CO-1.** Incorporate strategic management concept
- CO-2.** Provide academic training to learners
- CO-3.** Giving global vision to the learner
- CO-4.** Undertaking general business policies

Paper 2 Human Resource Development

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Awareness of

1. Concepts of HRD
2. Techniques of HRD
3. Practices of HRD

CO-2. Making capable of Principles and Techniques as professional for development of HRD

Paper 3 Strategic Human Resource Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Tools and Techniques important for strategic contribution to HRM

Paper 4 Total Quality Management

Course Outcomes

Outcome- Students will gain knowledge on the following topics: -

CO-1. Concept of TQM

CO-2. Principles and tools to achieve TQM

Paper 4 Risk Management & Insurance

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Developing mindset regarding Risk

CO-2. Measurement of Risk

CO-3. Transfer of Risk

CO-4. Insurance business and its environment

Paper 5 Investment Analysis and Portfolio Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Exposure in field of security analysis and portfolio management with

1. Concepts
2. Tools
3. Techniques

Paper 6 Project Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Knowledge of learners in management of Projects

CO-2. Emphasis on Project formulation

CO-3. Tools and techniques of Project Appraisal

CO-4. Evaluation of worth of projects

Paper 7 International Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Focus on marketing management to incorporate the Marketing

1. Concepts
2. Problems
3. Techniques
4. Strategies

Paper 8 Rural and Industrial Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Understanding various concepts of Industrial Marketing

Paper 9 Marketing of Service

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Understanding of services and service marketing with emphasis on aspects of services marketing

Paper 10 System Analysis & Design

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Developing skills for analysis and design of the Information System

Paper 11 E-Business Technology & Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Concept and Application of E-business in the world

Paper 12 Enterprise Resource Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Understanding issues involved in implementation of ERP system

CO-2. Focus on

1. Cross functional processes
2. Integration of events across different functional areas



Department of PG Studies and Research in Sociology & Social work

Programmes Offered

1. M.A. Sociology
2. M.S.W.

Programme Outcomes

M.A. Sociology

- PO-1. Critical Thinking:** Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO-2. Effective Communication:** Read, Write, Speak and listen clearly in English and Hindi (Bilingual).
- PO-3. Social Interaction:** Provide a social exchange between two or more individuals.
- PO-4. Effective Citizenship:** Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO-5. Ethics:** Recognize different value and moral systems and correlate them with present system.
- PO-6. Environment & Sustainability:** To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.
- PO-7. Self-Directed & Life-long learning:** It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

Programme specific outcomes

- PSO-1.** Explain and apply the major theoretical perspectives in sociology they will enable to see the world from others' perspective also
- PSO-2.** Design and evaluate sociological research with Interdisciplinary Manner.
- PSO-3.** To understand the central concepts developed by the theorists to analyse the social world
- PSO-4.** To understand the application of the scientific method to understand 'social realities' with critical approach

Semester-1

Paper 1 Sociological Theories & perspective I

Course Outcomes

- CO-1.** The course deal with sociological tradition enable theories to know and understand essence of Sociology and issociety.
- CO-2.** The course with it theoretical frame demonstrates utility of the knowledge and equips the learners with Sociologicalskill.
- CO-3.** The course with equips the learners with methodological insight.
- CO-4.** The course generate curiosity to know more about latest dimensions of social dynamics and also the manifest one.

Paper 2 Methodology of Social Research

Course Outcomes

- CO-1. The course is designed to discuss and to make learners acquainted with basics of research methodology.
- CO-2. The course integrated theoretical, psychological and behavioural aspects of research.
- CO-3. The course explains types and there to prepare learners to determine and to proper method while conducting surveyresearch.
- CO-4. The course prepares student to me their maximum and to choose a proper design of research.

Paper 3 Rural Society

Course Outcomes

- CO-1. The course discusses the nature and nature and scope of a major branch of sociological knowledge –Rural sociology to develop conceptual understanding of rural society to the learners.
- CO-2. IT is designed to make learners equipped with theoretical knowledge of rural institutions and changing scenario.
- CO-3. This course integrates traditional social institution which generate cooperation, wesictence and interdependency ofpeople in rural society.
- CO-4. It also discusses problems of rural population due to negative constructions and exogenous factors.

Paper 4 Urban Sociology

Course Outcomes

- CO-1. This course is designed to develop knowledge and understanding about urban with a sociological lens.
- CO-2. The course makes lens understand the growth and development of urban centres and their types and nature for bathskills to explore the problems.
- CO-3. The course explains differences between social institutions of various levels of habitation.
- CO-4. The course equips the learners with theoretical explanation of dynamics of society and also make then acquaintedwith emerging deviation and problems to tackle them.

Paper 5 Sociology of Kinship, Marriage & Family

Course Outcomes

- CO-1. Dealing with the basic social institutions of ‘‘Mankind’’ the course enables the learners to understand the importance of Family Marriage and Kinship which are under threat by modern forces.
- CO-2. The course develops understanding among learners about evolution/ development of these basic institution which isnot known to others.
- CO-3. The course provides a better understanding of human groupings and their importance which are being challenged bymodern ideologies.
- CO-4. The course makes learner understand and provides skills to counter evil practices involved in family and individual disorganization.

Paper 6 Political Sociology

Course Outcomes

- CO-1. The course is designed to develop sociological perspective of political behaviour and institution.
- CO-2. It makes learners acquainted with various concept scheme and their implication in society.
- CO-3. It equips the learners understanding of various political processes and their social determinates to grow them inpresent scenario.
- CO-4. It provides an elaborated knowledge about political culture and their implication in society.

Semester-2

Paper 1 Sociological Theories & Perspective

Course Outcomes

- CO-1. This course is an extension of first paper of semester I (course no-soc 101) which demonstrate advanced theoretical frame work and orientation for extensive understanding of subject.
- CO-2. The course demonstrates the utility of sociological and equips the learner with requisite sociological skills.

CO-3. The course enables the learner to develop as a strong advocate of sociological knowledge.

CO-4. The course develops the learners an efficient social engineer.

Paper 2 Methodology of Social Research

Course Outcomes

CO-1. IN continuation of the course No. –Soc-102 the course demonstrates detail knowledge of Research Method and Techniques.

CO-2. It demonstrates basic statistical knowledge and skill of data analysis.

CO-3. Its course enables the learner to be skilled serious researcher to explore and add new knowledge for betterment of society as such.

CO-4. This course demonstrates various techniques relevant to various to sectors, generic, skill and global competencies.

Paper 3 Rural Sociology

Course Outcomes

CO-1. The course demonstrates the dynamics of rural society after independency enabling the learner to understand process of change in relation to relation development.

CO-2. The course equips the learner with requisite knowledge about and mechanism for proper implementation of various programmes.

CO-3. The course demonstrates various agencies of rural development and role of leadership grow the learner development agents.

CO-4. The course develops demonstrable professional behaviour and skills and job requirements in various levels of work.

Paper 4 Urban Sociology

Course Outcomes

CO-1. The course enables the learners to understand social structure of various types of town

CO-2. The course demonstrate negative aspects / problems of urbanization and mechanism of resettlement, develops the learners to be an effective and efficient agent of urban development.

CO-3. The course provides updated knowledge and specific understanding of important urban issues, develops the skills to counter them and insure safe urban life.

CO-4. Urban development is an important and inevitable question the course demonstrates the improved understanding to the students.

Paper 5 Sociology of Kinship, Marriage & Family

Course Outcomes

CO-1. The course enables students to understand various dimension of marriage and family in India, develops student's ambassador of studies.

CO-2. It demonstrates generic knowledge to process and factors of change in fundamental human institution for a better understanding of Indian society.

CO-3. The course describes the utility and supremacy of basic Indian social institutions and need of conformity required for homogeneous Indian society

CO-4. The course also updates the young learners with the adequate knowledge about emerging trends in family structure.

Paper 6 Political Sociology

Course Outcomes

CO-1. The course integrates political system with social system to assess various explanations of socio-political linkages in present India.

CO-2. The course with its theoretical frame demonstrates the facets and problems of modernization, enables the learners to understand the emerging trends in socio-political scenario and their long-term effects.

CO-3. The course enables the learner to grow as leaders and proof them a suitable candidate in political recruitment process.

CO-4. The course updates the learner with adequate knowledge of socio-psychological processes involved in political procedures.

Semester-3

Paper 1 Indian Society & Culture

Course Outcomes

CO-1. The course demonstrates theoretical different theoretical perspectives for a proper understanding of Indian society and culture.

CO-2. The course integrates indological and field view including recent streams to prepare learners to negative ideologies factor by deviants.

CO-3. The course grounded in theoretical framework which enriched learners with proper understanding and skill to preserve Indian culture.

CO-4. The course demonstrates utility of Indian social philosophers' views on Indian perspective of

CO-5. "Bhartiya Mode" of self-dependency and nationalism.

Paper 2 Sociology of Change & Development

Course Outcomes

CO-1. The course demonstrates theoretical framework of the concepts of social change and Development, necessary for in-depth understanding of present world.

CO-2. The course enables learners to understand multidimensional impact of the process of change.

CO-3. The course enables learners to understand the dynamics of the concept of development; from progress to sustainable development.

Paper 3 Sociology of Tribes

Course Outcomes

CO-1. The course enables learners to understand the most important section of population – 'Tribes'

CO-2. The course demonstrates the importance of the study of Tribal community in changing world.

CO-3. The course integrates knowledge about vanishing cultures of small groups with main body knowledge.

CO-4. The course enables learners to discard the concept of deprivation but to consider this large number of small group's culture as important illustrations of various social process and cultural heritage of India.

Paper 4 Social Psychology

Course Outcomes

CO-1. The course demonstrates conceptional and theoretical understanding of social psychological process influencing human behaviour in society.

CO-2. The course enables learners to understand psychological construed of individual and group and to prepare learners to work with various groups in real situations.

CO-3. The course grounded in theoretical framework enables learners for intensive correlating social processes with group psychology and emergency /decay of new / established response system.

Paper 5 Criminology and Penology

Course Outcomes

CO-1. The course demonstrates the utility of a special stream of sociological study for human life.

CO-2. The course enables one to understand concept, course and consequence of social behaviour need intensive study.

CO-3. The course integrates social realities and theoretical knowledge of criminality of human.

CO-4. The course enables the learners to understand the process and procedure of punishment and to work in probation sector.

Paper 5 Social Pathology

Course Outcomes

CO-1. The course demonstrates theoretical knowledge of social pathology and social disorganization emerging due

tonegative pressure of social structure.

CO-2. The course enables students to know and practice sociological knowledge in countering different forms of social disorganization.

CO-3. The course equips learners with requisite sociological knowledge and out social problems faced by vulnerable members of family (society) and to suggest proper measures to eradicate.

CO-4. The course enables learners to make recommendations for social welfare.

Semester-4

Paper 1 Indian Society & Culture

Course Outcomes

CO-1. This course is an extension of course No.-SOC 301, demonstrate acquisition of in-depth knowledge of demographic, cultural and structural aspects of Indian society and culture.

CO-2. It enables learners to understand historical moorings and changes taking place their in.

CO-3. The course demonstrates the utility of in-depth knowledge for Indian society and equips the students with sociological understanding to disseminate the fact about Indian culture.

CO-4. The course also demonstrates the utility of relevant knowledge to understand negative impact of exogenous ideology, attributes and models on Indian society.

Paper 2 Sociology of Change & Development

Course Outcomes

CO-1. In continuation of the course 302, this course demonstrates detailed knowledge of sustainable development and its relation with Indian culture.

CO-2. The course with its theoretical understanding provides learners a capacity to address various problems of development.

CO-3. The course enables learners to formulate social policies and programmes for regional development.

Paper 3 Sociology of Tribes

Course Outcomes

CO-1. This course is an extension of course no. 303 enables students to understand Economic and political structure of the tribal communities.

CO-2. This course integrates knowledge of traditional tribal political system with main stream system and identifies problems of political modernization.

CO-3. This course enables one to understand tribal situation and problems which generate unrests and movements.

CO-4. The course demonstrates relevant disciplinary knowledge and skill that enable learners to undertake studies / project in this unique field and prepare the as potential job seeker.

CO-5. Includes materials on tribal culture and society of Madhya Pradesh also.

Paper 4 Social Psychology

Course Outcomes

CO-1. The course demonstrates detailed knowledge of dynamics of social behaviour.

CO-2. It enables students to understand leadership traits and emergence.

CO-3. The course enables to develop demonstrable ability to use social psychological principles to solve wide range of social problems.

CO-4. Enables students to understand actual psycho-social processes and factors of warm full attitude and provocative intension.

Paper 5 Criminology and Penology

Course Outcomes

CO-1. The course with its theoretical framework (traditions) enables students to improve disciplinary knowledge.

CO-2. Demonstrate improved understanding of major (some) social problems and mechanism to solve them.

CO-3. Develop understanding of the violence/ crime against women and legal provisions.

CO-4. To develop knowledge about facilities in Madhya Pradesh.

Paper 6 Social Pathology

Course Outcomes

CO-1. Demonstrate the utility of sociological knowledge for solving real and urban problems.

CO-2. Enables learners to suggest measures to address delinquency and crime.

CO-3. The course enables the learners for further research work.

Master in Social Work (M.S.W.)

Programme Outcome

PO-1. Critical Thinking: Identifying the assumptions that frame our actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO-2. Effective Communication: Read, Write, Speak and listen clearly in English and Hindi (Bilingual).

PO-3. Social Interaction: Provide a social exchange between two or more individuals.

PO-4. Effective Citizenship: Demonstrate social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-5. Ethics: Recognize different value and moral systems and correlate them with present system.

PO-6. Environment & Sustainability: To understand the responsibility to conserve natural resources and protect global ecosystems to support health & wellbeing.

PO-7. Self-Directed & Life-long learning: It focuses on the process by which students take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress.

Programme Specific Outcome

PSO-1. Awareness of the social context, policies and programmes directed towards social development; understanding of social problems, social legislations and the rights-based Approach.

PSO-2. understand and appreciate diversity (caste, ethnicity, gender and marginalization), values and beliefs of multiple cultures in a global perspective, managing diversity, use of an inclusive approach to the extent possible.

PSO-3. Ability to work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on the part of a group and or a team in the interests of a common cause and work efficiently as a player.

PSO-4. Capacity to extrapolate from what one has learned and apply their competencies to solve different kinds of problems by stepping out of comfort zones and taking up challenges in unforeseen challenges.

Semester-1

Paper 1 Introduction to Social Work

Course Outcomes

To introduce all student about the process by which marginalized section will be helped. This subject include various philosophy of social work, historical background of social work and the field on which it is important to apply social work to uplift the society.

Paper 2 Research Methods

Course Outcomes

To develop research aptitude among the students. To introduce the scientific method and related research dimension like value neutrality, objectivity etc. it also includes methods like social survey, sampling and quantitative element involved in statistics like mean, median and mode.

Paper 3 Human Growth & Development

Course Outcomes

To give insight about various elements of growth and development and why it is necessary for any society. This include the development of personality, impact of intelligence on development, how learning contributes on development and how the particular perception leads to development or act as a constraint.

Paper 4 Process of Social Work

Course Outcomes

To educate all the students how the process of social work initiated. It covers the various social process of west and India, various theories of social case work ad importance of various basic elements like assumption, principles, and worker relationship in social work. It also introduces various theories of social case work and interview technique.

Paper 5 Social Pathology

Course Outcomes

To look at the anti-social element as a diseased condition and treat these diseases separately. These diseased could be alcoholism, drug abuse, juvenile and delinquency etc. this subject aims to lean these elements so that students can develop problem solving capacity for the society.

Paper 6 Social Problems in India

Course Outcomes

To give information about various perpetuating social problem in India and how these linked with social structure like casteism, communalism, regionalism etc. it also aims to introduce various social problem related with women (trafficking); rural India, urban society and new problem which introduced by the changing society.

Semester-2

Paper 1 Social Welfare and Social Work

Course Outcomes

To give insight about new social welfare can be initiated and performed with the help of social work. It includes various ideas like Sarvodaya, Gandhian principles etc. it also include the Indian concept o welfare state, how planning can be linked with social welfare, pre and post independent periods social planning.

Paper 2 Research Methods and Elementary Statistics Course Outcomes

Course Outcomes

To introduce various concept of data collection like observation, interview, questionnaire etc. and quantitative element of research linked with statistics like measurement of dispersion, correlation analysis etc. it also aims to give in depth knowledge about primary and secondary data and the case study technique.

Paper 3 Abnormal and Social Psychology

Course Outcomes

To acknowledge about social psychology and its relation with abnormalities in the society. It covers the element like mental health, anxiety, stress and how conflict emerged due to these elements. It also covers the importance of communication in social psychology and the ethical component like sympathy, suggestion etc.

Paper 4 Process of Social Work

Course Outcomes

To introduced the various element which are important in process of social work like the role of individual and community in social welfare process. It also includes the various dimension of social group work like History, Nature, Philosophy, what are the skill needed to be a social group worker and how the various practice and model are important for efficient social work.

Paper 5 Social Pathology

Course Outcomes

It explains about various social disease like poverty, unemployment, beggary, Drug paddling, smuggling etc. in society. With the help of various sociological perspective. It also explains about white color crime, suicide (durkhiem theory), and other associated crime. This subject also aims to suggest measures to eradicate the element.

Paper 6 Social Problems in India

Course Outcomes

To give information about various social problems pertaining to Indian society. It includes some diseased element like Alcoholism, drug addiction, white color crime, Juvenile delinquency. It also includes problem related to same particular section like SC, ST, and Backward caste. It includes some women's related issue like domestic violence, sex determining test.

Semester-3

Paper 1 Social Policy and Planning

Course Outcomes

To capture all the importance of policy and planning inn macro-social system. This subject includes various element of social policy like characteristics, objective, principles etc. and how the social policy develop like between economic and social development. It also includes various types of planning like capitalist, socialist etc. and how planning developed in per and post independent India.

Paper 2 Social Welfare and Agency Administration

Course Outcomes

To give in-depth knowledge about administration and why it is important for social welfare. It include various theoretical concept of welfare administration, meaning, scope, function of administration, private administration and associated issue like accountability, integrity and problems.

Paper 3 Rural Sociology

Course Outcomes

To give in-depth knowledge about rural society of India by explaining about various institutions like Marriage, Caste, Family. To give knowledge about economic system of present and the economic system of ancient time like Jajmani, Raiyatwari, Mahalwari system. It also aims to explain problems of rural society like Migration, Untouchability etc. so that students can develop solution for these problems.

Paper 4 Urban Sociology

Course Outcomes

To acknowledge the student about urbanization and its trends like industrialization, population growth etc. so that they can understand the urban society and their institutions like family, marriage etc. to explain the student about urban problems so that they can realize the importance of urban planning, management and the role of urban administration.

Paper 5 Industrial Sociology

Course Outcomes

To give information to students about industrialization and how it impacts on social structure in India. It includes the history of industrialization and various issues related to labor like labor's wage, grievance and redressal, migration, indebtedness etc. It also includes the role of social work through trade union, labour welfare

Paper 6 Labour legislation and Labour welfare

Course Outcomes

To give information about various labour laws of India, which are made for the welfare of labour like wage law, maternity benefit, compensation, factory act etc. It also covers various institutions which work for labour like ILO, Trade union etc.

Semester-4

Paper 1 Development & Planning

Course Outcomes

To develop insight about the relation between development and planning in society. It includes various govt. organizations like NHRC, Planning commission etc. It also covers various aspects of development in Indian society like role of youth, importance of development project and center-state relation in with respect to development

Paper 2 Social Policy and Social Legislations

Course Outcomes

To educate all the students about how policies and legislation are in relation by give information about policies like Education policy, Housing policy and Legislation like Untouchability Act, Marriage Act etc. It covers the various community or group related legislation and policies.

Paper 3 Rural Sociology

Course Outcomes

To give knowledge about various development activities in rural society like development of Panchajay Institution (PRI), NGO, SHG, Cooperatives. This subjects also include various issues and strategies of rural development and how rural leadership influence the rural society. It also aims to explain the various process of social change like sanskritization, modernization etc.

Paper 4 Urban Sociology

Course Outcomes

To explain the students about the present working trends in urban society. It includes the concepts Indian cities; the problems like slum, sanitation, hygiene etc.; and the changing occupational structure of the urban society. It also aims to explain the

decentralized urban government and various issues like crime, environment problem, drug abuse, women issue etc.

Paper 5 Industrial Relation and Labour Organization

Course Outcomes

To acknowledge the student about industrial sector and how labour organization play a pivotal role in industries like negotiation, mediation etc. it covers the trade union and its function, workers participation, ILO etc. it also covers the history of trade union in India.

Paper 6 Personal Management and Industrial Psychology

Course Outcomes

To give knowledge about psychology of industry in relation to various personnel working in it so that industry can achieve maximum growth. This subject includes various personnel management like recruitment, promotion etc. grievance and discipline related issue. In psychology dimension it includes motivation, incentives, moral efficiency and it also include role of industrial psychologist.



INSTITUTE OF AGRICULTURAL SCIENCES

Programmes Offered

1. Bachelor of science (hons) Agriculture

Bachelor of science (hons) Agriculture

Programme Outcome

- PO-1.** To gain knowledge of different streams of agriculture like agronomy, entomology, plant breeding, plant pathology, soil science etc. in practice.
- PO-2.** To study the competent professionally with ethical responsibility as an individual as well as in multidisciplinary teams with positive attitude.
- PO-3.** To devise communication and extension methodologies for transfer of Agricultural Technologies.
- PO-4.** To identify, critically analyzes, formulate and solve agriculture economics and marketing problems to benefit farmers.
- PO-5.** To able to design a system and process to meet desired needs of food and nutrition with the knowledge of protected cultivation and Post-Harvest Technology.

Programme Specific Outcome

- PSO-1.** Agriculture programme is designed to prepare graduates to attain the following outcomes:
- PSO-2.** An ability to apply knowledge of different streams of agriculture in practice. An ability to critically analyzes and solve marketing problems.
- PSO-3.** An ability to design a system to meet desired needs of food and nutrition.
- PSO-4.** An ability to devise and conduct experiments, interpret data and provide well informed conclusions.

Semester-1

Paper 1 Fundamentals of Horticulture

Course Outcomes

- CO-1.** Be able to develop commercially nursery and orchard.
- CO-2.** Be able to develop new plant through training, pruning, tree form function

Paper 2 Fundamentals of Plant Biochemistry and Biotechnology

Course Outcomes

- CO-1.** Knowledge of production of micro-propagation and DNA finger printing.
- CO-2.** Knowledge of concepts and applications of plant biotechnology.
- CO-3.** Clear understanding of structures of Monosaccharides

Paper 3 Fundamentals of Soil Science

Course Outcomes

- CO-1. Knowledge of soil profile in field, taxonomy, classification of soils of India.
- CO-2. Knowledge of soil sampling tools and collection and storage of the representative sample for soil testing.
- CO-3. Determination of soil reaction which include pH, EC and OC.
- CO-4. Estimation of soil physical properties, soil texture, structure, density, porosity, soil colour, consistency and plasticity
- CO-5. Knowledge of soil problems like acidic, saline and alkaline.

Paper 4 Fundamentals of Plant Biochemistry and Biotechnology

Course Outcomes

- CO-1. Gain knowledge of treespecies.
- CO-2. Knowledge of nursery lay-out forforestry.
- CO-3. Maintenance of forestproducts.

Paper 5 Comprehension & Communication Skill In EnglishCourse

Outcomes

- CO-1. Importance of professionalwriting.
- CO-2. Knowledge about oral presentation ofreports.
- CO-3. Understanding readingskills.

Paper 6 Fundamentals of Agronomy C

Course Outcomes

- CO-1. Basic knowledge of branches ofagriculture.
- CO-2. Basic elements of climate and weather required for cropproduction.
- CO-3. Understanding of cultivation process of crops likewise plantgeometry.

Paper 7 Elementary Mathematics

Course Outcomes

- CO-1. To able to calculate and analysis date for statisticalanalysis.
- CO-2. To able the Addition Subtraction, Multiplication andTranspose.
- CO-3. To study Straight lines and slope-point form of equation of line also.

Paper 7 Introductory Biology

Course Outcomes

- CO-1. Gain knowledge living organism their origin, evolution & diversity
- CO-2. Knowledge of Functions of cell, Seed & important plant kingdom families of flowering plants.

Paper 8 Agricultural Heritage Credits

Course Outcomes

- CO-1. Knowledge of crop scenery in India and world
- CO-2. Knowledge of national agriculture setup in India.

Paper 9 Rural Sociology & Educational Psychology

Course Outcomes

- CO-1. To understand the different programmes of Agriculture Extension
- CO-2. To study the Sociology and Rural Sociology understand the social structure and social groups.
- CO-3. To understand the rural leadership.
- CO-4. To understand the Psychology and Educational Psychology.

Paper 10 Rural Sociology & Educational Psychology

Course Outcomes

- CO-1. After completing this module, the students will inculcate various human values and professional ethics.
- CO-2. Student will be able to take better decisions and lead a happy and successful life.

Semester-2

Paper 1 Fundamentals of Genetics

Course Outcomes

- CO-1. Familiarity with Quantitative traits and Qualitative traits. Knowledge improvement of Cytoplasmic inheritance.
- CO-2. Basic understanding of chromosome structure, morphology, Karyotype and Idiogram.
- CO-3. Understanding the numerical chromosomal aberrations (Polyploidy) and evolution.
- CO-4. Knowledge of Gene expression regulation and differential gene activation.

Paper 2 Agricultural Microbiology

Course Outcomes

- CO-1. Information about soil microbiology.
- CO-2. Understanding plant microbe interactions.
- CO-3. Metabolism and nutrition in bacteria.
- CO-4. Knowledge of food preservation.

Paper 3 Soil and Water Conservation Engineering

Course Outcomes

- CO. To understand different types of soil and water conservation methods.

Paper 4 Fundamentals of Crop Physiology

Course Outcomes

- CO-1. To understand seed structure and seed physiology.
- CO-2. To understand the seed germination and purity percentage of seed

Paper 5 Fundamentals of Agricultural Economics

Course Outcomes

- CO-1. To understand different types of activity of Economics & Agricultural Economics.
- CO-2. To understand the importance & scope of Agricultural Economics
- CO-3. Find the cost of cultivation & cost of production

CO-4. To obtain information on Indian Agricultural Economics.

Paper 6 Fundamentals of Plant Pathology

Course Outcomes

CO-1. To get Knowledge about various types of plant pathogens.

CO-2. Information on pathogenicity, pathogenesis and infection, its related symptoms.

Paper 7 Fundamentals of Entomology

Course Outcomes

CO-1. Be able to relationship of biotic and a biotic factor in insect lifecycle

CO-2. Be able to design basic statistical analyses and evaluate statistical information of insect forecasting

CO-3. Be able to apply and judge the scientific method of pest control in the laboratory and in the field

CO-4. To understanding of the primary literature in entomology and be able to critically evaluate information in primary research articles.

CO-5. Be able to apply actual doses of insecticides to maintain pesticides hazards, environmental pollutions and soilpollutions.

Paper 8 Communication Skills and Personality Development Credits

Course Outcomes

CO-1. After completing this course, the students will develop excellent verbal and non-verbal communication skills, andwill be having an effective personality full of confidence to face the challenges of life.

CO-2. Developing effective personality personal communication skills.

Paper 9 Fundamentals of Agricultural Extension Education

Course Outcomes

CO-1. To understand the different programmesof Agriculture Extension.

CO-2. To study the Rural Sociology and understand the social structure and social groups.

CO-3. To understand the ruralleadership.

Semester-3

Paper 1 Crop Production Technology-I (Kharif Crops)

Course Outcomes

CO-1. Knowledge of economic and geographical distribution of field crops.

CO-2. Knowledge of cultivation practices of field crops.

CO-3. Knowledge about best practices of cultivation.

Paper 2 Fundamentals of Plant Breeding

Course Outcomes

CO-1. Understand the various genetic principles and procedures of cropimprovement.

CO-2. Knowledge gained about modes of reproduction for deciding various genetic improvement aspects of cropspecies.

CO-3. Be familiar with the principles and methods of various plant breedingmethods.

CO-4. Gaining knowledge about various plant geneticresources.

CO-5. Knowledge gained about evaluate the economic importance of various crops with plantbreeding point ofview.

Paper 3 Agricultural Finance and Co-Operation

Course Outcomes

CO-1. Clear understanding agril. finance & credit

CO-2. Knowledge the different commercial banks, RRB & NABARD bank activity.

CO-3. Understanding the need & classification of credit

Clear understand the different types of credit & credit analysis like 3“R”, 5 „C” & 7P”s

CO-4. Knowledge the nationalization of commercial bank.

CO-5. To understand the higher financing agencies such as RBI, ADB (Asian development bank), World bank, insurance

Paper 4 Agricultural Informatics

Course Outcomes

CO-1. Basic knowledge of computer and agricultural informatics.

CO-2. Perfection in practicing WINDOWS Operating Systems and other agriculture informatics software and devices.

Paper 5 Farm Machinery and Power

Course Outcomes

CO-1. Knowledge of agricultural machineries.

CO-2. Knowledge of equipments in used in organic and inorganic farming.

Paper 6 Production Technology for Vegetable and Spices

Course Outcomes

CO-1. To give knowledge about the production technology of spices, medicinal and aromatic plants.

CO-2. To give knowledge about the site selection of nursery and their management.

Paper 7 Environmental Studies and Disaster Management

Course Outcomes

CO-1. Knowledge about management of flood, earth quack, cyclone and land slides.

CO-2. To knowledge about how to control the pollution.

Paper 8 Statistical Methods

Course Outcomes

CO-1. Enhanced Collection of Statistical Data. Formation of Frequency Distribution.

CO-2. Improvement in the Information about Sampling, Sampling Distribution and Standard Error.

CO-3. Enhanced Knowledge of Sample Surveys in Agriculture.

Paper 9 Livestock & Poultry Management

Course Outcomes

After study of this subject the students will be able to differentiate between various breeds of livestock and poultry and will be able to manage livestock and poultry units professionally.

Paper 1 Crop Production Technology-Ii (Rabi Crops)

Course Outcomes

- CO-1. To knowledge the best cultivation uses in cultivation enics and animals' roles in agriculture.
- CO-2. To able cost-effective crops for increase economic level of India Enhanced Knowledge of Sample Surveys inAgriculture.
- CO-3. To calculate the accurate doses of herbicides and pesticide an application in crops.
- CO-4. To knowledge about the NUE increase in rabi season crops.

Paper 2 Production Technology for Ornamental Crops, Maps and Landscaping

Course Outcomes

- CO-1. Be able to develop gardens different types of mughal, Japanese, Persian through gardening.
- CO-2. Be able to develop landscaping different style of formal, free, wild and informal garden through gardening.
- CO-3. To able to develop lawn for recreation and garden beautification feeling a natural way.
- CO-4. To give knowledge about the production technology of medicinal and aromatic plants.
- CO-5. To give knowledge about the site selection of nursery and their management.

Paper 3 Renewable Energy and Green Technology

Course Outcomes

- CO-1. Knowledge of production of Liquid bio fuel.
- CO-2. Knowledge of wind energy and their mills.
- CO-3. Clear understanding of principles of agricultural wastes.

Paper 4 Problematic Soils and Their Management

Course Outcomes

- CO-1. Knowledge gained about soil quality and health.
- CO-2. Learnt about quality of irrigation water.
- CO-3. Received knowledge about Flooded and polluted soil.

Paper 5 Production Technology for Fruit and Plantation Crops

Course Outcomes

- CO-1. Be able to higher production using high yielding variety through high innovative practices.
- CO-2. Be able to handling and utilization of tropical and subtropical fruits through preservation and drying.
- CO-3. Be able to develop new variety and new species through propagation methods, selection and hybridation.

Paper 6 Principles of Seed Technology

Course Outcomes

- CO-1. Knowledge on Seed Production and Seedquality.
- CO-2. Production of nucleus & breeder's seed, Foundation and certified seedproduction.
- CO-3. Familiarize with Seed Act and Seed Act enforcement.
- CO-4. Informed about Intellectual Property Rights, Patenting, WTO, Plant Breeders Rights.
- CO-5. General principles of seed storage.

Paper 7 Farming System and Sustainable Agriculture

Course Outcomes

- CO-1. An ability to know the techniques for agricultures sustain ability.
- CO-2. To know the problem Soil, acid, Salt affected and calcareous Soil characteristics, and Nutrient availabilities.
- CO-3. To understand the different types of method of reclamation of mechanical, chemical and biological method.
- CO-4. To know the soil fertilizer application & recoup.

Paper 8 Agricultural Marketing Trade & Prices

Course Outcomes

- CO-1. Understanding of uncertainty and risk in marketing.
- CO-2. Knowledge of agricultural marketing, cooperative marketing.

Paper 9 Introductory Agro Meteorology & Climate Change

Course Outcomes

- CO-1. Understanding of bad effects of climatic change.
- CO-2. Knowledge of weather forecasting.
- CO-3. Knowledge about determination of vapor pressure and relative humidity.
- CO-4. Knowledge of measurement, tabulation and analysis of rain.

Paper 10 Biopesticides & Biofertilizers

Course Outcomes

- CO-1. History and concept of bio pesticides.
- CO-2. Importance, scope and potential of bio pesticides.

Semester-5

Paper 1 Principles of Integrated Pest and Disease Management

Course Outcomes

- CO-1. Gain knowledge of agro-ecosystem dynamics of insect pests & Diseases.
- CO-2. Integrated management of insect pests & diseases.
- CO-3. Identification of bio-control agents, different predators and natural enemies.

Paper 2 Manures, Fertilizers and Soil Fertility Management

Course Outcomes

- CO-1. Gained knowledge about fertilizers classifications and manufacturing.
- CO-2. Understand the complex fertilize, secondary and micro nutrient fertilizers.
- CO-3. Gained knowledge about mechanism of nutrient & transport to plant.
- CO-4. Learnt preparation methods of organic manures.

Paper 3 Pests of Crops and Stored Grain and Their Management

Course Outcomes

- CO-1. Distribution and biology of agricultural insect pest.
- CO-2. Knowledge of stored grain pests.

Paper 4 Diseases of Field & Horticultural Crops & Their Management-I

Course Outcomes

- CO-1.** Knowledge of field crops diseases of Rice, Maize, Sorghum, Bajra, and Ground nut.
- CO-2.** Knowledge of horticulture crops disease of Guava, Banana, and Papaya.
- CO-3.** Knowledge of Cruciferous vegetables crops disease.

Paper 5 Crop Improvement-I (Kharif Crops)

Course Outcomes

- CO-1.** Knowledge of crop improvement aspects in Kharif Crops.
- CO-2.** Learnings of climate resilient crop varieties considering global warming.

Paper 6 Entrepreneurship Development and Business Communication

Course Outcomes

After completing this course, the students will develop excellent verbal and non-verbal communication skills, and will be having an effective personality full of confidence to face the challenges of life

Paper 7 Geoinformatics And Nano-Technology and Precision Farming

Course Outcomes

- CO-1.** Better knowledge for the cultivation of precision agriculture.
- CO-2.** To identify the remote sensing concepts and application in agriculture.
- CO-3.** To knowledge the basic elements of crop production and their role in agricultural economy.
- CO-4.** To knowledge the nano-technology techniques.

Paper 8 Intellectual Property Rights

Course Outcomes

- CO-1.** Knowledge of intellectual property.
- CO-2.** Knowledge of legislations covering IPR in India.
- CO-3.** Clear understanding of breeders, researcher and farmers rights.

Paper 9 Applied Hi-Tech Horticulture

Course Outcomes

- CO-1.** Give basic knowledge nursery management and their mechanization.
- CO-2.** Give basic knowledge Micro irrigation systems, canopy management and high density orcharding.
- CO-3.** To give the basic knowledge mechanized harvesting of produce.
- CO-4.** To give the knowledge based on Remote Sensing, Geographical Information System.

Paper 10 Crop Production-I (Kharif Crops)

Course Outcomes

- CO-1.** To study best cultivation, use in cultivation of fabric crops
- CO-2.** To import knowledge on Eugenics and animals' roles in agriculture.
- CO-3.** To able cost-effective crops for increase economic level of India.
- CO-4.** To calculate the accurate doses of herbicides and pesticide application in crops.

CO-5. To study about the NUE increase in rabies as on crops

Semester-6

Paper 1 Rainfed Agriculture & Watershed Management

Course Outcomes

CO-1. Knowledge about mulching and its effects on soil moistures conservation.

CO-2. Knowledge about new water harvesting techniques.

CO-3. To solve the problems of dry land agriculture related to climate, soil, technological and socio-economic conditions.

Paper 2 Protected Cultivation and Secondary Agriculture

Course Outcomes

CO-1. Knowledge about low cost green houses equipments.

CO-2. Awareness of irrigation systems used in greenhouses.

CO-3. Understanding of drying and dehydration, air cleaner and grain dryer.

Paper 3 Diseases of Field & Horticultural Crops & Their Management

Course Outcomes

CO-1. Knowledge of disease cycle and management of field crops.

CO-2. Knowledge of symptoms, disease cycles of horticulture crops.

Paper 4 Post-Harvest Management and Value Addition of Fruits and Vegetables

Course Outcomes

CO-1. The acquired knowledge about the value addition (fruit & vegetable preservation).

CO-2. The get knowledge about the post harvest technology of fruit and vegetables.

CO-3. The get knowledge about fermented and non-fermented beverages.

Paper 5 Management of Beneficial Insects

Course Outcomes

CO-1. Gain the knowledge of beneficial insects and their economic importance.

CO-2. Knowledge of method and use soft he equipments for rearing and production of the honey, silk and lac.

CO-3. Identified of the different beneficial insects.

Paper 6 Crop Improvement (Rabi Crops)

Course Outcomes

CO-1. Acquired knowledge about improvement of various crops.

CO-2. To get knowledge about the hybrid seed production.

CO-3. To Acquired knowledge about the seed production technology.

Paper 7 Crop Production (Rabi Crops)

Course Outcomes

CO-1. To knowledge the field preparation, fertilizer application and sowing methods.

CO-2. To awareness moisture conservation nmethods.

CO-3. To understanding the hoeing and weeding methods.

Paper 8 Principles of Organic Farming

Course Outcomes

CO-1. To study the concept of organicfarming.

CO-2. To basis study of certification process and standards of organic farming.

CO-3. To study about processing, leveling, economic considerations and viability, marketing and export potential oforganic products.

Paper 9 Farm Management & Resource Economics

Course Outcomes

CO-1. Clear understanding crop and live stock enterprises.

CO-2. Knowledge of different types of farms.

CO-3. Knowledge of farm inventory and factor-product relationship.

CO-4. Determination of least cost combination of inputs.

Paper 10 Principles of Food Science and Nutrition

Course Outcomes

CO-1. Explain the chemistry underlying the properties of various food components.

CO-2. Knowledge the major chemical reactions that occur during food preparation and storage.

CO-3. Knowledge the important pathogens and spoilage micro organisms in foods.

Paper 11 Agri Business Management

Course Outcomes

CO-1. To study practical knowledge of agro based industries

CO-2. To study about working structure of agribusiness management.

Semester-7

Paper 12 Educational Tour

Course Outcomes

CO-1. Knowledge of rural setting in relation to agriculture and allied activities.

CO-2. Acquaintance of socio-economic conditions of farmers and theirproblems.

CO-3. Communication skills using extension teaching methods in transfer of technology.

CO-4. Development o f confidence and competence to solve agricultural problems.

Semester-8

Paper 12 Experiential Learning Programme/ (HOT)

Course Outcomes

CO-1. Professional skills and knowledge.

CO-2. Confidence and working in project mode.

CO-3. Knowledge of enterprise management capabilities

राजी दुर्गावती विश्वविद्यालय, जबलपुर(म.प्र.)

(पूर्व नाम जबलपुर विश्वविद्यालय, जबलपुर)



क्रमांक / अका. / 2021 / 6129

जबलपुर, दिनांक 14 / 10 / 2021

कार्यवृत्त

विद्या संबंधी योजना एवं मूल्यांकन मंडल (Academic Planning and Evaluation board) की बैठक सोमवार दिनांक 27/09/2021 को मध्याह्न 12.30 बजे "कौंसिल हॉल विश्वविद्यालय प्रशासनिक भवन, जबलपुर" में सम्पन्न हुई।

उपस्थित सदस्यगण:-

1	डॉ० कपिल देव मिश्र	कुलपति	अध्यक्ष
2.	प्रो० धीरेन्द्र पाठक		सदस्य
3.	प्रो० रामशंकर		सदस्य
4.	प्रो० सुरेन्द्र सिंह		सदस्य
5.	प्रो० अधिकेश राय		सदस्य
6.	प्रो० अलका नायक		सदस्य
7.	प्रो० अमित गुप्ता		सदस्य
8.	प्रो० भरत कुमार तिवारी	विभागाध्यक्ष	सदस्य
9.	प्रो० विवेक मिश्र,	विभागाध्यक्ष	सदस्य
10	डॉ० जे.के. मैत्रा	विभागाध्यक्ष	सदस्य
11	प्रो० अंजली वाजपेई	प्राचार्य, प्रतिनिधि	सदस्य
12	प्रो० लीला भलावी	प्राचार्य	सदस्य
13	डॉ० वृजेश सिंह	कुलसचिव	सचिव

1. विद्या संबंधी योजना एवं मूल्यांकन मंडल (Academic Planning and Evaluation board) की बैठक दिनांक 03/03/2015 के कार्यवृत्त को सम्पुष्ट करने पर विचार।

निर्णय:- विद्या संबंधी योजना एवं मूल्यांकन मंडल (Academic Planning and Evaluation board) की बैठक दिनांक 03/03/2015 के कार्यवृत्त (बिन्दु क्रं. 02 एवं 03 को छोड़कर) को सम्पुष्ट किया गया।

2. विश्वविद्यालय में नया कृषि विज्ञान संस्थान स्थापित करने पर विचार।


टीप:- कृषि विज्ञान संकाय के अंतर्गत विश्वविद्यालय में बी.एससी.(ऑनर्स) एग्रीकल्चर/ बी.एससी. (ऑनर्स) हार्टीकल्चर/ बी.एससी.(ऑनर्स) फारेस्ट्री/ बी.एससी.(ऑनर्स) फूड साइंस एण्ड टेक्नोलॉजी जैसे नए पाठ्यक्रमों का अध्यापन आरंभ किया जाना प्रस्तावित है।

निर्णय:- कृषि विज्ञान संकाय के अंतर्गत बी.एससी.(ऑनर्स) एग्रीकल्चर पाठ्यक्रम प्रारंभ करने की सहमति प्रदान की गई साथ ही छात्रों के Internship हेतु छोट छोट किसानों से खेत गोद लेने हेतु सुझाव दिया गया एवं विभिन्न संस्थाओं से एमओयू का भी शीघ्र कार्य कराने हेतु कहा गया।

- 3.. विश्वविद्यालय व्यावसायिक अध्ययन एवं कौशल विकास संस्थान द्वारा प्रस्तावित एक वर्षीय पी.जी. डिप्लोमा इन गाइडेंस एंड काउंसलिंग प्रारंभ करने पर विचार ।
- टीप:- उक्त प्रकरण विद्यापरिषद् की स्थायी समिति की बैठक दिनांक 21/09/2021 के निर्णयानुसार विश्वविद्यालय व्यावसायिक अध्ययन एवं कौशल विकास संस्थान द्वारा प्रस्तावित एक वर्षीय पी.जी. डिप्लोमा इन गाइडेंस एंड काउंसलिंग प्रारंभ करने हेतु प्रकरण विद्या संबंधी योजना एवं मूल्यांकन मण्डल के समक्ष प्रस्तुत किया जाये ।
- निर्णय:- विश्वविद्यालय व्यावसायिक अध्ययन एवं कौशल विकास संस्थान द्वारा प्रस्तावित एक वर्षीय पी.जी. डिप्लोमा इन गाइडेंस एंड काउंसलिंग प्रारंभ करने की स्वीकृति प्रदान की गई ।

अध्यक्ष के प्रति धन्यवाद ज्ञापित कर बैठक की कार्यवाही संपन्न हुई ।

आदेशानुसार,


कुलसचिव,

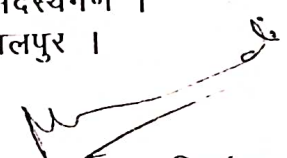
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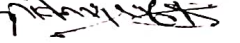
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प्रतिलिपि सूचनार्थ एवं आवश्यक कार्यवाही हेतु :

1. विद्या संबंधी योजना एवं मूल्यांकन मंडल के समस्त सम्माननीय सदस्यगण ।
2. कुलपति जी/कुलसचिव जी के निज सहायक, रा०दु०वि०वि०, जबलपुर ।


सहायक कुलसचिव(अकादमिक)


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जबलपुर 

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Rani Durgavati Vishwavidyalaya Jabalpur, MP Government, Cluster No. 8
 सरस्वती विहार, पचपेड़ी, जबलपुर, मध्य प्रदेश

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1	156280	RESERACH METHODOLOGY TRANSFORMATION OF LIS EDUCATION, LIBRARIES and INFORMATION SERVICES for KNOWLEDGE SOCIETY	13/07/2023	12/08/2023				Issued
2	156372	INFORMATION ANALYSIS, REPACKAGING, CONSOLIDATION, AND INFORMATION RETRIEVAL	11/05/2023	10/06/2023			13/07/2023	Returned
3	155989	An introduction to universal decimal classification;	06/04/2023	06/05/2023			11/05/2023	Returned
4	120260	Gyan Jagat Avam Vishaya Jagat Library administration	06/04/2023	06/05/2023			11/05/2023	Returned
5	119343	INFORMATION ANALYSIS, REPACKAGING, CONSOLIDATION	04/03/2023	03/04/2023			06/04/2023	Returned
6	155989	INFORMATION ANALYSIS, REPACKAGING, CONSOLIDATION	04/03/2023	03/04/2023			06/04/2023	Returned
7	155989	INFORMATION ANALYSIS, REPACKAGING, CONSOLIDATION	04/03/2023	03/04/2023			06/04/2023	Returned

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Title	Information Processing And Retrieval: For library and information professionals
Author(s)	SATAYANARAYANA, N R
Imprint	New Delhi; Ess Ess Publicaitons; 2016
Date Added	10/07/2023

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ADVANCED PRACTICAL PHYSICS
By M C Chohan.
Material Type: Books and Monographs / Books / General Books
Format/Medium: Print
Published In: English
Published By: Pragati Pralcarhan Meerut, NoPlace; 2015
Multi Volume?: N


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ADVANCED PRACTICAL PHYSICS
By M S Shauhan;S P Singh.
Material Type: Books and Monographs / Books / General Books
Format/Medium: Print
Published In: English
Published By: Pragati Prakashan, No Place; 1990
Multi Volume?: N

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By J L Dsilva.
Material Type: Books and Monographs / Books / General Books
Format/Medium: Print
Published In: English
Published By: Longman; local; 1990
Multi Volume?: N

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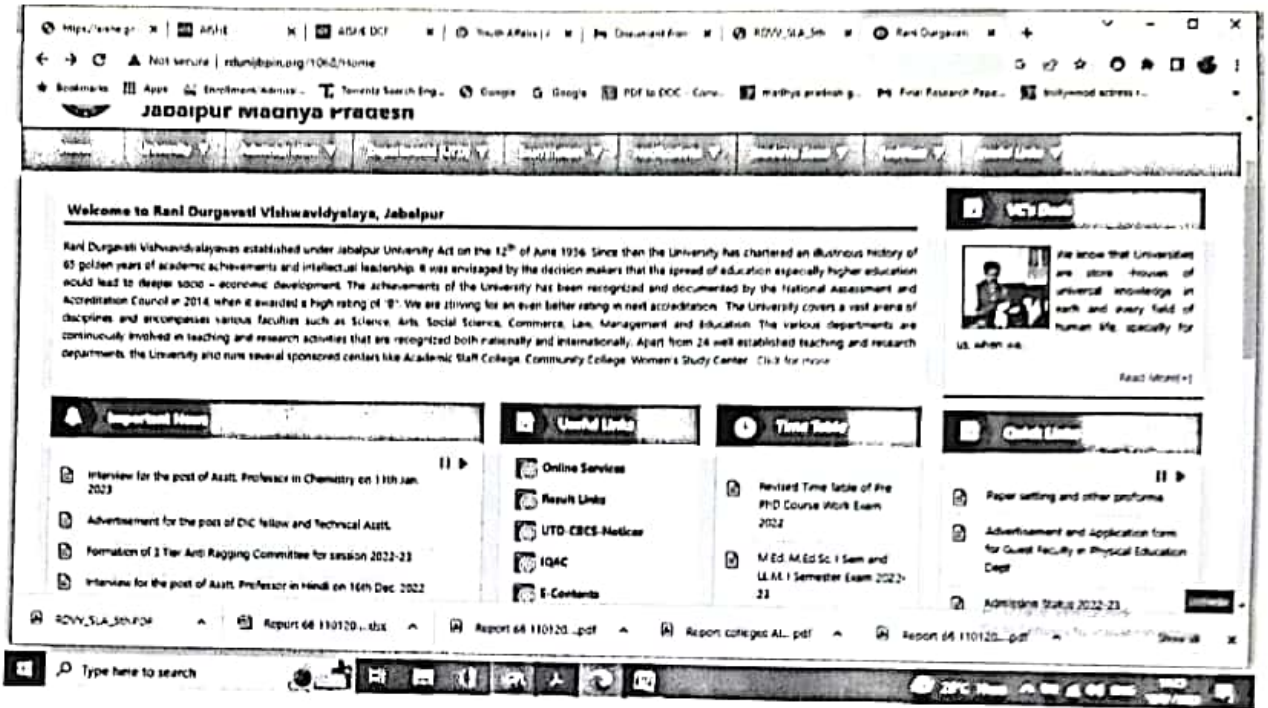
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NDL Resources:
South Asian Archive: activated

Shodh Shuddhi Resources:
Original: activated

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Student Information System (SIS)				INS
Pay-Unpaid/View Receipt SIS Registration	As per Notif.	As per Notif.	-	AP COI
Forgot Password for SIS	As per Notif.	As per Notif.	-	APPLY
SIS Student Login	As per Notif.	As per Notif.	-	APPLY
Registration for SIS	As per Notif.	As per Notif.	-	APPLY
Examination Application				
Apply for Supplementary Exam (Private Student)	As per Notif.	As per Notif.	-	APPLY
Examination Form UG/PG	As per Notif.	As per Notif.	-	APPLY
Pay-Unpaid/ View Receipt Exam Form	As per Notif.	As per Notif.	-	APPLY
Apply for ATKT/Supplementary Exam	As per Notif.	As per Notif.	-	APPLY
Pay-Unpaid/ View Receipt ATKT/Supplementary Exam	As per Notif.	As per Notif.	-	APPLY
Admit Card (Regular/Private)				
Download Admit Card	As per Notif.	As per Notif.	-	APPLY

INSTRUCTIONS

Dhyani
12/01/23
Nodal Officer
Online Cell
Rani Durgavati Vishwavidya
Jabalpur (M.P.)



RANI DURGAVATI VISHWAVIDYALAYA Jabalpur, Madhya Pradesh

application no., QR Code, payment date, Transaction id, amount, payment from/ status etc are mentioned) for one application and your amount has been credited to your account. If you have generated then do not fill another application, please check your profile on **MPOnline Limited**

Student Information System

CONTACT US

MPONLINE LIMITED

3rd Floor, State IT Park,

Abbas Nagar near RGPV Gandhi Nagar

Bhopal-462 036 (MP), India

Phone No. : 0755 6720200

Powered by

Ajaya
Nodal Officer
Online Cell
Rani Durgavati Vishwavidyalaya
Jabalpur (M.P.)


UTD ADMISSION THROUGH MERIT/ENTRANCE FORM RECEIPT 2022-23



Rani Durgavati Vishwavidyalaya Jabalpur, M.P.

MPonline Limited
ISSUES FROM 2013 onwards

Transaction Details


Application Number: (Please carefully note your application No for future reference.)	RA22619640		
Payment Mode:	NETBANKING	Channel Id:	CITIZEN
Transaction Id:	22061248107107163588	Payment Status:	DONE ON Jun 12 2022 10:21:48:147AM
Application Fee(Rs.):	330	Late Fee(Rs.):	0
Portal Fee(Rs.):	50	Total(Rs)	380

Sample Admission Form

Course Details

School of Studies/ Department	DEPARTMENT OF MATHS AND COMPUTER SCEIENCE(U002)		
Application For :	MSC	Subject :	Mathematics

Personal Details

Candidate Name	KATYAYANI SAHU	आवेदक का नाम: (कत्यायनी साहू)	 <i>Katyayani</i>
Father's Name	CHATURBHUJ KUMAR SAHU		
Mother's Name	NIRMALA SAHU		
Date of Birth	01/04/2001 (DATE FORMAT: DD/MM/YYYY)		
Gender	FEMALE		
Marital Status	UNMARRIED		
Husband's Name			
Category	OBC	Sub-Category	
Nationality	INDIAN	Religion	HINDU
Registered Unorganized Workman(पंजीबद्ध असंगठित कर्मकार)	No		

Almu
12/01/23

Address

House No/Village	WARD NO 79	Rani Durgavati Vishwavidyalaya Jabalpur (M.P.)
Colony/Post	BEHIND PRIYADARSHINI COLONY DUMNA	
City/Tehsil	JABALPUR	State MADHYA PRADESH

District JABALPUR Pincode 482005

Contact Details

Phone No: 91- Mob. No. XXXXXX5652 Email Id:XXXXXX@gmail.com

Educational Qualifications Details

Exam Passed	Unlversity/Board	Year of Passing	Subject /Branch	Div. (ex. 1/2/3)	Per(%) (ex.00.00)	Marksheet Certi. No.	Result Awaited
Higher Secondary	M.P. BOARD	2019	PCM	1	75.60	0535990	:No
Graduation	BSC	2022	PCM	1	71.45	0009599	:No
PG/Other Qualification							

Place of residence In Jabalpur

House no. WARD NO 79 Area BEHIND PRIYADARSHINI COLONY DUMNA ROAD JABALPUR

Enclosures

10+2 marksheet or Equivalent : YES
Caste Certificate : YES
Graduation Marksheet : YES
Domicile Certificate : YES
Post Graduation Marksheet : NO
Others : NO

Please Click To See Attachment(Marksheet) Last Exam passed (%) marks : 71.45

Declaration

I, hereby agree to abide by the decision of the University in all matters of my admission. I, further declare that the information given in this form are correct and no criminal case/offence is pending against me. I will follow all the admission rules / regulation & produce all original documents relating to date of birth, eligibility, weightage, caste certificate etc at the time of counselling.
Note: Submit the hardcopy of the online application form alongwith required document(12th marksheet, Vth Sem/VIth Sem marksheets etc.as applicable) to the concern teaching department before last date, otherwise application will not be considered for admission.

Dhyan
12/01/23
Nodal Office Online Cell
Rani Durgavati Vishwavidyalaya
Jabalpur (M.P.)

Pay-Unpaid/Re-Print Exam Form Receipt DEC-2022

Transaction Details

Application Status: Your Application Payment has been done.					
Application Number:	EX22R110248 (Please note your application No for future reference.)				
Payment Mode:	KIOSK	Channel Id:	K20171201058387		
Transaction Id:	23010953090400928028	Payment Status:	Done on Jan 9 2023 2:19:53:113PM		
Application Fee(Rs.):	2360	Late Fee(Rs.)	0		
Portal Fee(Rs.):	40	GST	0		
Total Fee(Rs)	2400				



QR-Code [Scan to Verify]

Student Detail

Name of College(Code)		Hitkarini Law College, Jabalpur(P728)				
Name of Examinee(in Hindi)		VEDANT DUBEY()				
Enrolment No.	R16006P3690069	Roll No		Category	UR	
Programme/Course	LL. B.	Branch	LL. B. (C254)	Sem./Year	1SEM	
Gender	MALE	Status	REGULAR	Session	DEC-2022	
Father's Name	SUNIL DUBEY	Mother's Name	VIDHI DUBEY	Date of Birth	05 Aug 1998	
Present Address	1240 SHAHI NAKA, GARHA, JABALPUR, Jabalpur, Madhya Pradesh - 482003				Handicapped	No

Paper Details

Paper Code	Paper Description	T(Theory)/P(Practical)/I(Internal/Sessional)/N(Not applicable)
LLB001	LAW OF CONTRACT(INDIAN CON. ACT 1872) SALE OF GOODS ACT	TNI
LLB002	CONSTITUTIONAL LAW OF INDIA-I	TNI
LLB003	GENERAL LEGAL ENGLISH	TNI
LLB004	ENVIRONMENT LAW OF INDIA	TNI
LLB005	INDIAN PENAL CODE-I	TNI
LLB006	HUMAN RIGHTS AND PUBLIC INTERNATIONAL LAW	TNI

महत्वपूर्ण सूचना:

छात्र एवं प्राचार्य ये सुनिश्चित कर लें की वह 1(BA/BSC/BCOM/MA/MSC/MCOM) सेमेस्टर में 2 से ज्यादा एवं समस्त सेमेस्टर मिला कर 4 से ज्यादा विषयों में ATKT न हो।

1) छात्र यह सुनिश्चित कर लें कि वे वर्तमान semester/ Year/ Prof. की परीक्षा में बैठने की पात्रता रखते हैं पात्रता न होने पर इस फॉर्म को विश्वविद्यालय द्वारा रद्द कर दिया जावेगा एवं इसके जिम्मेदार छात्र स्वयं होंगे. यह ऑनलाइन फॉर्म Valid तब होता है जब इसका

Signature
12/01/2023
Nodal Office/Online Cell

Jabalpur (M.P.)

ऑनलाइन भुगतान (Payment Done) किया गया हो, जिसमें कि Application number, QR Code, Transaction Id, Payment date, Channel Id आदि का विवरण स्पष्ट रूप से हो अन्यथा फॉर्म निरस्त माना जाता है।

CERTIFIED THAT

I hereby declare that the information filled by me is true and complete as per my knowledge. If any information provided by me is found false or incorrect then i shall be disqualified by the university.

Print

Prerna
12/01/23

Nodal Office Online Cell
Rani Durgavati Vishwavidyalaya
Jabalpur (M.P.)

SERVICE LEVEL AGREEMENT
FOR
ONLINE SERVICES FOR UNIVERSITY

Between

Rani Durgavati Vishwavidyalaya, Jabalpur
and

MPOne Limited, Bhopal

Signature

12/01/23

Nodal Officer

Online Cell

Rani Durgavati Vishwavidyalaya
Jabalpur (M.P.)

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Dhyani
12/01/23
Nodal Officer
Online Cell
Rani Durgavati Vishwavidyalaya
Jabalpur (M.P.)

1. Confidentiality Statement

This document contains confidential and proprietary information of Rani Durgavati Vishwavidyalaya (RDVV), Jabalpur and MPO Online Limited (MPO). Duplication or use other than for evaluation purposes in connection with negotiating and implementing a definitive written agreement for the provision of application maintenance outsourcing services is prohibited. This document must be returned to the MPO in the event such an agreement is not enacted.

2. Parties and Timeline

This service level agreement (SLA) is between the Rani Durgavati Vishwavidyalaya (RDVV), Jabalpur and MPO Online Limited (MPO) for the three years starting 5th April 2022.

- This SLA between MPO and RDVV may be reviewed quarterly or as may be needed to determine if any modifications or amendments are needed to in the services.
- The purpose of this service level agreement is also to document the list of service delivery of the Online Counselling System (Services listed in the Service Catalogue below).
- SLA can be renewed before the expiry date in the absence of which the services will be stopped on the SLA expiry date.

3. Service Catalogue

The MPO will provide the following services to the MPMSU:

Services	Description
Sub-domain	MPO will Create/maintain a separate sub domain for Rani Durgavati Vishwavidyalaya (RDVV), Jabalpur. (Example= https://rdvv.mponline.gov.in)
Other	Edit Module, Pay-unpaid/View Receipt, SMS Facility, Email Facility, Various MIS Reports/Data Repository, Candidate Status
Online Fee Payment Facilities	Online fee payment facilities will be providing by MPO Online.



[Signature]
17/04/23
Nodal Officer

Online Cell
Rani Durgavati Vishwavidyalaya
Jabalpur (M.P.)

4. Commercial

- Portal Charge MPO will charge the following portal fee, which will be borne by the candidates while availing the services online.

#	Type of Application	Portal Charge (In Rs.) *excluding taxes
1.	All Enrolment/ Examination/ Registration Form	45/-
2.	UTD Entrance/ PhD/ MPhil Entrance Form	50/-
3.	All Counter Base Applications	30/-
4.	College Affiliation Module	200/-

The above portal charge will be given by the students for the applications. The amount collected on behalf of RDVV shall be deposited in the Bank Account of the RDVV by MPOOnline Ltd. at T+1 (transaction + 1 working day) excluding Sundays and State Govt. and Bank Holidays.

5. Training and Support

MPOOnline shall provide instructor for the centralised training (if so required) on the related services & operations to the Nodal officer and representatives from department at a RDVV venue in Bhopal. MPOOnline shall provide technical / functional support to the portal users through customer care facility at MPOOnline. Customer support at MPOOnline, Bhopal is available from 8:30AM to 07:30 PM all working days and 10:00AM to 5:00PM on Holidays. If required troubleshooting beyond office hours MPO and RDVV shall provide the contact Telephone numbers of service owners having the required knowledge.

6. Nodal Officers

RDVV will appoint a Nodal Officer who with his team will have sufficient experience on functions and services of the departments. Similarly, MPO will also assign SPOC (single point of contact). Their responsibilities are as below:

- Facilitate/liaise with MPOOnline on the university services.
- Provide all related information as required for the services.
- Changes/updates of departmental information on portal (time to time).
- Ensure sufficient time to deliver/develop new services and freeze the functionality of the process with the university and then inform the same to MPOOnline for the development.



Dhyen
12/01/23
Nodal Officer
Online Cell
Rani Durgavati Vishwavidyalaya
Jabalpur (M.P.)

- All the information to be provided by RDVV shall be in the form of softcopy (editable/ updatable).
- All IT policy must be follow by both parties.

7. Intellectual property rights

The Intellectual Property Rights (IPR) of the system being developed, ownership of tools, technology and methodology used in the project shall remain with MPO. However all the output reports and data maintained in the system shall belong to Rani Durgavati Vishwavidyalaya, Jabalpur.

8. SLA Termination

The current system is being developed is under current agreement for 3 years during which it cannot be terminated without completing at least one full academic year. However, subsequently this Agreement may be terminated.

- By either party by giving the other party not less than 30 (thirty) days written notice of termination;
- Forthwith if either party commits any material breach of any term of this Agreement and which in the case of a breach capable of being remedied, shall not have been remedied within 30 working days of written notice to remedy the same;
- Termination shall be without prejudice to any other rights or remedies a party may be entitled to hereunder or at law and shall not affect any accrued rights or liabilities of either party nor the coming into force or continuation in force of any provision hereof which is expressly intended to come into force or continue in force on or after such termination.
- Forthwith on the expiry or earlier termination of this Agreement, each party shall, return to the other party all documents and materials, if any, belonging to the other party with regard to this agreement or shall, at the option of the disclosing party, destroy underwritten certification all documents or materials in connection with this agreement in a manner that its subsequent retrieval by whatever means is rendered impossible.

9. Other Important points to be implemented:

- Data ownership will remain with the department of RDVV.
- MPO will provide with different kinds of reports needed by the RDVV.
- SSL Certificates, Portal Safety measures, Server Load balancers and all services related to portal will be provided by MPO. MPO must ensure 99.99% server up time.
- Transaction failed or any double payment shall be returned to particular student.



[Signature]
12/01/23

Nodal Officer
Online Cell

Rani Durgavati Vishwavidya...

The MPO and the VU agree to the service levels and terms outlined in this agreement.

For the MPO Online (MPO)

For the Rani Durgavati Vishwavidyalaya, Jabalpur

Signature: [Signature]

Signature: [Signature]

Name: Arun Panchal

Name: Dr. Brijesh Singh

Designation: Chief Operating Officer

Designation: Registrar

Date: 17/11/23

Date: 20/11/23

Place: Bhopal, M.P.

Place: Jabalpur, M.P.



In presence of:

Signature: [Signature]

Signature: [Signature]

Name: Abhay Kumar Kam

Name: Dr. Rashmi Sandhu (Mishra)

Designation: Business Head

Designation: Prof. and Exam Controller
R.D.V.V. Jab.

[Signature]
(Dr. R.K. Gupta)
Nodal Officer
Nodal Cell, Odisha



[Signature]
17/11/23
Nodal Officer
Online Cell

Rani Durgavati Vishwavidyalaya
Jabalpur (M.P.)

APPENDIX - I

The services provided to following level for Rani Durgavati Vishwavidyalaya, Jabalpur:-

Admin Login	College login	UTD Login	Citizen Link
Examination Service	Report	Application	Important Links For (Scholarship Scheme for Higher Education Department)
BULK ADMIT CARD	Download Attestation Sheet (Center)	Entrance/Merit Form Approval	Gaon ki Beti and Pratibha Kiran
Absentees/UFM Entry	College Master Update	Exam Form Approval	Mukhya Mantri Medhavi Vidarthi Yojna (MMVY)
Absentees/UFM Entry Report	Enroll/Admission Approval Report	Internal External Marks Entry	Mukhya Mantri Jankalyan Yojna (MMJK)
Exam Link Status	Exam Summary	Mphil/PHD Approval	Post Metric Schemes of SC/ST/OBC
Sitting Arrangement Plan	Exam cum Roll List Report	UTD Course Eligibility - Setting	Private Exam Form 2022
Exam Centre Allocation	Internal/Practical Marks Report	Enroll/Admission Approval	Apply for Private Exam Form UG/PG
EDIT Merit/Entrance Application	Enrollment Service	Enrollment Service	Pay-Unpaid/View Receipt Exam UG/PG
Exam Form Approval	ePravesh Promotion for 2nd/3rd Yr UG & 3rd Sem PG	Student Enrollment Form Edit	Private Enroll 2022
EXAM FORM UPDATION(Only Paid)	ePravesh Promotion of UG/PG For Ex Student	Report	Apply for Private Enrollment Form(1YEAR Fresh Student only)
Fee Relaxation For Student	Enroll/Admission Approval(only for Regular Students)	Admission/Entrance Report	Pay-Unpaid/View Receipt Enroll
Internal/Practical Marks Entry	Student Enrollment Form Edit	Internal External Marks Entry Report	Counter Base Application
Multiple Option Tool	Update NEP Subject	Enroll/Admission Approval Report	Apply for Degree(For only UG/PG Students)
New UGPG student Entry	Student Quick Search	Examination Service	Apply for Duplicate Marksheet
Paper Count/Private Exam form Approval	AFFILIATION	Private Student Approval	Apply for Migration Certificate
RDVV Exam Notification	Affiliation Renewal Application(2021-22)	Sitting Arrangement Plan	Apply for Provisional Degree
Scheme Update/Set Exam Notification Date	Affiliation Renewal Application(2022-23)	Absentees/UFM Entry	Pay-Unpaid/View Receipt(Counter Base App)



Dhyan
12/01/23
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Online Cell
Rani Durgavati Vishwavidyalaya
Jabalpur (M.P.)

Admin Login	College login	UTD Login	Citizen Link
Student Mode Change	Affiliation Renewal Application Receipt(2022-23)	Absentees/UFM Entry Report	For UTD Examination
	Affiliation Renewal Application Receipt(2021-22)	UTD Entrance Attestation	Apply for ATKY/Supplementary Exam(CBCS Only)
Counter Base Applications	Parmanent Affiliation Application(2022-23)	Course/Branch/Paper Edit	Pay-Unpaid Receipt ATKY/Supplementary Exam(CBCS Only)
CounterBase Approval	Parmanent Affiliation Application Recient(2022-23)	Exam Summary	Examination Form UG/PG(CBCS Only)
Reval ReTotal Approval	Affiliation Renewal Application(2019-20)	Exam Cum Roll List Report	Pay-Unpaid/ View Receipt Exam Form(CBCS Only)
Reval/Retotal/VAB Date Insertion Report	Affiliation Renewal Receipt(2019-20) Application	Download Attestation Sheet	Various Fee Collection
College Course Approval	UTD Course Eligibility Setting	Counter Base Applications	Apply for Various Fee Collection
Counter Base Applications Report Datewise	Examination Service	CounterBase Approval	Pay-Unpaid Various Fee Collection
Download Master Data	Absentees/UFM Entry		Registration Application
Enroll/Admission Approval Report	Absentees/UFM Entry Report		Registration Form for Offline Students(REGULAR/PRIVATE)
Enroll/Admission Summary	BULK ADMIT CARD		Pay-Unpaid/View Receipt for Offline Students
Exam cum Roll List Report	Course/Branch/Paper Edit		Student Information System(SIS)
Exam Data Download	Exam Form Approval		Pay-Unpaid/View Receipt SIS Registration
Exam Data Download Centrewise	Internal/Practical Marks Entry		Forgot Password for SIS
Exam Summary	Private Exam form Approval		SIS Student Login
Internal External Data Download	Sitting Arrangement Plan		Registration for SIS
Internal/Practical Marks Entry Report			Examination Application
CC and Practical Marks Entry Report			Apply for Supplementary Exam (Private Student)
INTERNAL/PRACTICAL MARKS STATISTICS			Apply for ATKY/Supplementary Exam
			Pay-Unpaid/ View Receipt ATKY/Supplementary Exam



Notary Officer
Online Cell
Rani Durgavati Vishwavidyalaya
Jabalpur (M.P.)

Admin Login	College login	UTD Login	Citizen Link
Download Photo/Previous Result Download			Examination Form UG/PG
Quick Search for Counterbase Details			Pay-Unpaid/ View Receipt Exam Form
Quick Student Search			Admit Card (Regular/Private)
Download Attestation Sheet			Download Admit Card
Enrollment Service			
ePravesh Promotion for 2nd/3rd Yr UG & 3rd Sem PG			
Category Wise Enroll Counte			
Pravesh Promotion of UG/PG For Ex Student			
Enroll/Admission Approval			
Student Enrollment Form Edit			
Enroll Generation			
Update NEP Subject			
Edit Group/Branch(MAY-2017)			
Offline Entry(ISEM)			
Generate Offline Enroll No			
Student History			
Update Registration			
Application			
UTD Course Eligibility Setting			
AFFILIATION			
Affiliation Report			

Allyan
17/11/23

Nodal Officer
Online Cell
Rani Durgavati Vishwavidyalaya
Jabalpur (M.P.)





Rani Durgavati Vishwavidyalaya Jabalpur Madhya Pradesh

Result-CBCS

	03-Jan-2023	B.Com. Hons. IV Sem 2021-22
	28-Dec-2022	M.A. Rural Development II Semester 2021-22
	28-Dec-2022	M.A. Rural Development IV Semester 2021-22
	19-Dec-2022	B.Pharmacy V Semester 2021-22 Rept Ex
	15-Dec-2022	M.Sc. Physics IV Semester 21-22 Rept Ex
	15-Dec-2022	M.Sc. Physics III Semester 21-22 Rept Ex
	14-Dec-2022	B.A.LL.B. Hons. VI Semester 2021-22
	12-Dec-2022	M.Sc. Mathematics II Semester 2021-22
	12-Dec-2022	M.Sc. Computer Science IV Semester 2021-22
	12-Dec-2022	M.Sc. Computer Science II Semester 2021-22
	07-Dec-2022	PGDCA II June 2022
	07-Dec-2022	MCA VI June 2022

Quick Links

- YouTube Link for 34th Convocation
- Paper setting and other proforma
- Advertisement and Application form for Guest Faculty in Physical Education Dept

[More Links\[+\]](#)



HOME

LOGIN: KIOSK | 02G



RANI DURGA VATI VISHWA VIDYALAYA
Jabalpur, Madhya Pradesh

RANI DURGA VATI VISHWA VIDYALAYA

UTD Admission Form 2022-23

Fields Marked with(*) are mandatory

Dept. Details

School of Studies/ Department* -- Select --

Course Details

Application For* -- Select -- Subject* -- Select --

Candidate's Personal Details [As per 10+2 Marksheet]

First Name* Last Name*

Full Name in Hindi* *नाम हिंदी में टाइप करने हेतु, अंग्रेजी में शब्द टाइप करें फिर स्पेल चेंजर दवाएँ

DOB (dd/mm/yyyy)* Gender* --SELECT--

Father's Name* Mother's Name*

Marital Status* SELECT Husband's Name

Category* --SELECT--

Sub-Category* FreedomFighter
 Physically Handicap (Nishakatjan)
 MP Domicile
 University Employee ward
 ...

Registered Unorganized Workman(फकीरबाद असंगठित कर्मकार)

Nationality* --SELECT-- Religion* --SELECT--

Permanent Address

House No./Village* Colony/Post*

City/Tehsil* District*

State* -- Select -- Pincode*

Contact Details

Phone No. (With STD Code) Mobile No.* Email id*

Educational Qualifications Details

Exam Passed	University/Board	Year of Passing	Subject /Branch	Result Awaited	Div.(ex. 1/2/3)	Per(%. (ex.00.00)	Marksheet Certi. No.
Higher Secondary*	<input type="text"/>	--Select--	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Graduation	<input type="text"/>	--Select--	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
PG/Other Qualification	<input type="text"/>	--Select--	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Place of residence in Jabalpur

House no. Area

Checklist for Enclosures (To be photocopies of the enclosures along with this form should be submitted in the department for verification before last date of application.) (Please Tick the Box)*

10+2 marksheet or Equivalent Caste Certificate Graduation Marksheet Domicile Certificate Post Graduation Marksheet Others

Please Attach Scan copy of last Marksheet in (.pdf format and size < 200 KB)

No file chosen

Last Exam passed (%)marks* (ex.00.00)

Eligibility and Reservation criteria will be as per norms of M.P. Higher Education Department, Govt. of M.P. and concern regulatory bodies. Please ensure for Eligibility and other condition from departmental profile at <http://www.rdvvjpn.org> before submission of form.

Photo Signature [Click to see the Photo Signature Template.](#)

JHEUM



RANI DURGA VATI VISHWA VIDYALAYA
Jabalpur, Madhya Pradesh

MPonline Limited
Joint Venture between Govt of Madhya Pradesh and G2G
मध्यप्रदेश सरकार का पोर्टल



RANI DURGA VATI VISHWA VIDYALAYA

Available Services

SERVICES NAME	START DATE	END DATE	DOWNLOAD	ACTION
Enrollment Form (Regular) MAY-2022				
Pay-Unpaid/View Receipt /Enroll Status	As per Notif.	As per Notif.	-	APPLY
Enrollment /Registration Form (UTD UG/PG)	As per Notif.	As per Notif.	-	APPLY
Various Fee Collection				
Apply for Various Fee Collection	As per Notif.	As per Notif.	-	APPLY
Pay-Unpaid Various Fee Collection	As per Notif.	As per Notif.	-	APPLY
For UTD Examination				
Apply for ATKT/Supplementary Exam(CBCS Only)	As per Notif.	As per Notif.	-	APPLY
Pay-Unpaid Reciept ATKT/Supplementary Exam(CBCS Only)	As per Notif.	As per Notif.	-	APPLY
Examination Form UG/PG(CBCS Only)	As per Notif.	As per Notif.	-	APPLY
Pay-Unpaid/ View Receipt Exam Form(CBCS Only)	As per Notif.	As per Notif.	-	APPLY
Counter Base Application				



RANI DURGA VATI VISHWA VIDYALAYA
Jabalpur, Madhya Pradesh

MPonline Limited
Joint Venture between Govt of Madhya Pradesh and G2G
मध्य प्रदेश सरकार का पोर्टल

RANI DURGA VATI VISHWA VIDYALAYA

Application Search

Application No :

Date of Birth :

(DATE FORMAT: DD/MM/YYYY)

c21dtD

Type the text



Search



RANI DURGA VATI VISHWA VIDYALAYA
Jabalpur, Madhya Pradesh

MPonline Limited
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मध्य प्रदेश सरकार का पोर्टल



Examination Form

Selection Criteria

Fields are mandatory(*)

* Enter Enroll Number :	<input type="text"/>
* Select Session	--Select--
* Select Semester	--Select--
* Select Status	--Select--

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Jabalpur, Madhya Pradesh

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Student

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Enter Password

K8MEPd

Type the text

Login

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रानी दुर्गावती विश्वविद्यालय, जबलपुर

क्रमांक /DIC./2023/208

जबलपुर दिनांक 20/1/2023

अधिसूचना

अधिसूचना विश्वविद्यालय अनुदान आयोग नई दिल्ली से प्राप्त प्रपत्र जोकि NEP-2020 नियम के अनुसार विश्वविद्यालय में रिसर्च एंड डेवलपमेंट सेल स्थापित करने हेतु समिति का गठन माननीय कुलपति जी के निर्देशानुसार किया जाता है

1. कुलपति जी - चेयरमैन रिसर्च एडवाइजरी काउंसिल
2. प्रो.एस.एस. संघू - निदेशक डायरेक्टर (RDC)
- समिती 1. फाइनेन्स एण्ड इन्फ्रस्ट्रक्चर
 1. डॉ. सैलेश चौबे - सभापति
 2. डॉ. नीलकंठ पेंडसे - सदस्य
- समिती 2. रिसर्च प्रोग्राम पॉलिसी डेवलपमेंट
 1. प्रो. राकेश बजपाई - सभापति
 2. प्रो.एस. एन. बगची - सदस्य
- समिती 3. कॉलेब्रेशन एण्ड कम्युनिटी
 1. प्रो. सुरेन्द्र सिंह - सभापति
 2. डॉ. विशाल बन्ने - सदस्य
- समिती 4. प्रोजेक्ट डेवलपमेंट मोनिट्रिंग एण्ड कमर्शलिजेशन.
 1. डॉ. आशीष शर्मा - सभापति
 2. डॉ. अश्वनी जैसवाल - सदस्य
- समिती 5. IPR लीगल एण्ड एथिकल मैटर.
 1. डॉ. अश्वनी जैसवाल - सभापति
 2. डॉ. देवी लता रावत - सदस्य

आदेशानुसार,

(Signature)

कुलसचिव

रानी दुर्गावती विश्वविद्यालय,
जबलपुर, दिनांक 20/1/2023

पृ. क./ DIC /2023/208

प्रतिलिपि सूचनार्थ एवं आवश्यक कार्यवाही हेतु:-

.....२

1. समिति के सभापति एवं सदस्यगण.

2. विभाग अध्यक्ष प्रभारी समस्त शिक्षक विभाग रा.दु.वि.वि, जबलपुर.
3. कुलपति जी एवं कुलसचिव जी के निजी सहायक.
4. प्रभारी कंप्यूटर सेंटर रानी दुर्गावती विश्वविद्यालय जबलपुर को इस निर्देश के साथ की उक्त अधिसूचना को विश्वविद्यालय की वेबसाइट में अपलोड करने का कष्ट करें.
5. समन्वयक आई.क्यू.ए.सी. रा.दु.वि.वि, जबलपुर.

(Signature)
प्रो. एस.एस. संघू R.D.VV
निदेशक, (DIC) JABALPUR
रा.दु.वि.वि, जबलपुर
Office
R.D.VV
JABALPUR
New Delhi

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JABALPUR, (M.P.), INDIA



 GPS Map Camera

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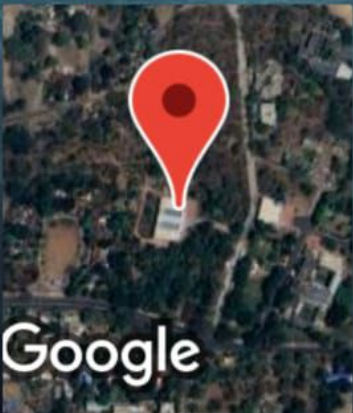
5X6G+77F, Rani Durgavati University Campus, Jabalpur,

Madhya Pradesh 482001, India

Lat 23.160734°

Long 79.97578°

23/05/23 02:32 PM GMT +05:30





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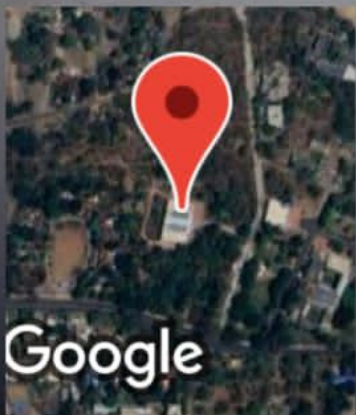
Jabalpur, Madhya Pradesh, India

5X6G+77F, Rani Durgavati University Campus, Jabalpur,
Madhya Pradesh 482001, India


Lat 23.160732°

Long 79.975728°

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Jabalpur, Madhya Pradesh, India

5X6G+77F, Rani Durgavati University Campus, Jabalpur,

Madhya Pradesh 482001, India


Lat 23.160778°

Long 79.975799°

23/05/23 02:32 PM GMT +05:30





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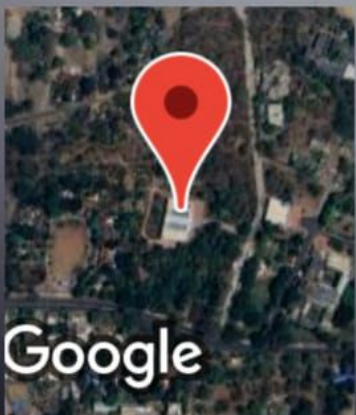
Jabalpur, Madhya Pradesh, India

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Madhya Pradesh 482001, India


Lat 23.160729°

Long 79.975715°

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Jabalpur, Madhya Pradesh, India

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Lat 23.160793°

Long 79.975798°

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