1.2.1 Percentage of new courses introduced of the total number of courses across all programs offered during the last five years.

Programme Attached to the New Education Policy (NEP) Scheme, Department of Higher Education, Madhya Pradesh

Major Courses

Programme Name: BCA I Semester

Registrar
Rani Durgavati Vishwavidyalaya
Jabalpur

रानी दुर्गावती विश्वविद्यालय, जबलपुर(म.प्र.)

(पूर्व नाम जबलपुर विश्वविद्यालय, जबलपुर)

क्रमांक/अका./2021/6177 जबलपुर, दिनांक 29/11/2021

अधिसूचना

एतद् द्वारा अधिसूचित किया जाता है कि माननीय कुलाधिपति जी द्वारा विश्वविद्यालय समन्वय समिति के अनुसमर्थन की प्रत्याशा में राष्ट्रीय शिक्षा नीति 2020 के परिप्रेक्ष्य में अध्यादेश 14 ए तथा 14 बी अनुसार कार्यवाही सुनिश्चित किए जाने हेतु अनुरोध किया है ।

अतएव उपरोक्तानुसार कार्यवाही सुनिश्चित की जाए ।

संलग्न उपरोक्तानुसार ।

आदेशानुसार

कुलसचिव 29/11/21
रानी दुर्गावती विश्वविद्यालय,
जबलपुर ।

पृ0 क्रमांक/अका./2021/6177अ जबलपुर, दिनांक 29/11/2021

प्रतिलिपि सूचनार्थ :--

1. समस्त विभागाध्यक्ष, रा0दु0वि0वि0, जबलपुर।
2. विश्वविद्यालय से सम्बद्ध समस्त शासकीय/अशासकीय महाविद्यालयों के प्राचार्यगण ।
3. क्षेत्रीय अतिरिक्त संचालक, उच्च शिक्षा विभाग, जबलपुर।
3. अधिष्ठाता,छात्र कल्याण/महाविद्यालयीन विकास परिषद्, रा.दु.वि.वि., जबलपुर।
4. परीक्षा नियंत्रक, रा.दु.वि.वि., जबलपुर।
5. उपकुलसचिव/सहायक कुलसचिव, रा0दु0वि0वि0, जबलपुर।
6. प्रभारी, आई0क्यू0ए0सी0 सेल, रा0दु0वि0वि0, जबलपुर।
7. कुलपति/कुलसचिव जी के सचिव, रा0दु0वि0वि0, जबलपुर।

सहायक कुलसचिव(अकादमिक)
रानी दुर्गावती विश्वविद्यालय,
जबलपुर

Ordinance 14 A

Ordinance for three/four years Undergraduate Degree (CBCS Semester Mode)

(As per the "Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions" issued by UGC, New Delhi under National Education Policy 2020)

1. The provisions of this Ordinance shall be applicable from the academic session 2021-22
2. The provisions of this Ordinance shall apply to the three-year/six-semester Bachelor's degree or four-year/eight-semester Bachelor's degree (Honours/Research) undergraduate programmes such as Bachelor of Arts (B A), Bachelor of Science (B Sc), Bachelor of Commerce (B Com), Bachelor of Computer Application (B C A), Bachelor of Business Administration (B B A), Bachelor of Home Science (B H Sc) and other similar Undergraduate programmes notified by the University
3. The Ordinance shall apply to all such programmes being run by the University in its Teaching Departments (UTDs)/SOS (School of Studies) and its affiliated autonomous colleges for their regular as well as non-collegiate (private) students
4. Admission rules and guidelines for admission to these programmes will be framed by the University for admission in its UTDs/SOS and by the State Government for admission in colleges Admission to the 4th year (Level 8) shall be available only in the institutions offering a 4-year Undergraduate Programme Autonomous colleges with NAAC grade "A" or above can frame their admission guideline completely based on merit subject to the Government's reservation policy
5. Students who have completed Grade 12 School Leaving Certificate from Board of Secondary Education, Madhya Pradesh, Bhopal, or an equivalent examination from any other board recognised by the State Government/University will be eligible for admission to these undergraduate programmes
6. The admission shall be made on merit calculated on the basis of criteria notified by the University/ State Govt , keeping in view the guidelines/norms in this regard issued by the UGC and other statutory bodies concerned and taking into account the reservation policy issued by the Government from time to time
7. Student enrolment in a programme/course shall be restricted to the seats allotted by the University
8. The in-take capacity shall be determined in advance by the University/autonomous college following the guidelines/norms issued by the State Government/UGC and other statutory

bodies concerned The same could be suitably incorporated in the admission guidelines for the information of all concerned and uploaded on the institutional website or admission portal of Department of Higher Education.

9. Depending upon the academic and physical facilities available, the university/college may earmark seats to a maximum of 10% of the seats sanctioned for the previous year of the programme for lateral entrants in the ***second year/third year/fourth year*** of a first-degree programme, if the student has successfully completed the first year/second year/third year of the same programme in any institution and wants to re-enter into the programme after a break in studies

10. To enable multiple entry and exit points in the academic programmes, qualifications such as certificate, diploma, and degree are organized in a series of levels in an ascending order from level 5 to level 8 Level 5 represents certificate and level 8 represents Bachelor Degree (Honours/Research) qualification (Table 1) The four-year undergraduate programme shall comprise courses under the following subjects/categories

    i) Disciplinary/interdisciplinary Major (Core Course + DSE) **(64 credits)**
    ii) Disciplinary/interdisciplinary Minor **(32 credits)**
    iii) Generic Elective **(16 credits)**
    iv) Skill Enhancement Courses/Vocational Courses **(12 credits)**
    v) Ability Enhancement Courses **(08 credits)**
    vi) Field projects/internship/apprenticeship/community engagement and service/research project **(28 credits)**

N B.. For B B A /B C A /B H Sc and like programmes, a group/subject shall be chosen as Major/Minor/Generic Elective

Qualification and Credit Requirements are given in Table 1 The ***entry and exit*** options for students, who enter the undergraduate programme, are as follows.

1st Year (First & Second Semester-Level 5)

Entry 1 The entry requirement for first semester in Level 5 is successful completion of Class 12 from M P Board of Secondary Education, Bhopal, or an equivalent examination from any other board recognised by the State Government/University. A programme of study leading to entry into the first year of the Bachelor's degree is open to those who have met the admission requirements

Exit 1: If a student passes all the courses of Level 5 and earns the requisite number of credits, the student will become entitled to an *Undergraduate certificate in the faculty of*

her/his Major Subject. If she/he wants to exit, can exit the programme with *Undergraduate certificate* in hand

2nd Year (Third & Fourth Semesters-Level 6)

Entry 2. The entry requirement for fourth semester in *Level 6 is the successful completion of Level 5* A programme of study leading to the second year of the Bachelor's degree is open to those who have met the admission requirements

Exit 2: If a student passes all the courses of Level 5 & 6 and earns the requisite number of credits, the student becomes entitled to an *Undergraduate Diploma in the faculty of her/his Major Subject* If she/he wants to exit, can exit the programme with *Undergraduate Diploma* in hand A diploma requires 80 credits with 40 credits in each of the two levels

3rd Year (Fifth & Sixth Semester-Level 7)

Entry 3 The entry requirement for semester six in *Level 7 is successful completion of Level 5 & 6.* A programme of study leading to the Bachelor's degree is open to those who have met the admission requirements

Exit 3: If the student passes all the courses of Level 5 to 7 i e , first to six semesters and earns the requisite number of credits, the student becomes entitled to the *Undergraduate Degree in the faculty of her/his Major Subject.* A Bachelor's degree requires 120 credits from level 5 to 7, with 40 credits at level 5, 40 credits at level 6, and 40 credits at level 7

4th Year (Seventh & Eighth Semester-Level 8)

Entry 4. An individual seeking admission to a *Bachelor's degree (Honours/Research) (Level 8)* in a specified field of learning would have completed all requirements of the relevant *three-year bachelor degree (Level 7)* After completing the requirements of a three-year Bachelor's degree, candidates who meet a minimum CGPA of 7 5 shall be allowed to continue studies in the fourth year of the undergraduate programme to pursue and complete the Bachelor's (Honours/ Research) degree

Exit 4: If the student passes all the courses of level 5 to 8 and earns the requisite credits, the student becomes entitled to an *Undergraduate Degree (Honours/Research) in the faculty of her/his Major Subject* A Bachelor's degree (Honours/Research) requires a total of 160 credits from level 5 to 8, with 40 credits at level 5, 40 credits at level 6, 40 credits at level 7, and 40 credits at level 8

Table-1: Qualification Type and Credit Requirements

Levels	Qualification title	Credit requirements
Level 5	Undergraduate Certificate in the faculty of the Major Subject for those who exit after the first year (two semesters) of the undergraduate programme (Programme duration first year or two semesters of the undergraduate programme)	40
Level 6	Undergraduate Diploma in the faculty of the Major Subject for those who exit after two years (four semesters) of the undergraduate programme (Programme duration First two years or four semesters of the undergraduate programme)	80
Level 7	Bachelor Degree in the faculty of the Major Subject (Programme duration Three years or six semesters)	120
Level 8	Bachelor Degree in the faculty of Major Subject (Honours/Research) (Programme duration Four years or eight semesters)	160

The credits will be awarded by the University The credit can be calculated as follows

- One hour of theory or one hour of tutorial or two hours of laboratory work per week for 15 weeks resulting in the award of one credit,
- Credits for internship shall be ***one credit per week*** of training, subject to a ***maximum of six credits in a semester***

11. The minimum duration of the *undergraduate degree programme* shall be of three academic years/six semesters, whereas that of *undergraduate degree leading to Honours/Research* shall be of four academic years/eight semesters
    - A student who leaves the course anytime in the middle of the programme will retain the credits earned so far, which will be restored/transferred when she/he enters the programme again

The maximum duration for completing the Undergraduate Degree and Undergraduate Degree (Honours/Research) programme for regular students shall be 6 and 8 years, respectively; there shall be no such bar for non-collegiate (private) students

12. TYPES OF COURSES

Each of the subject/categories (i) to (v) as specified in clause 10 shall comprise of courses. Courses are the basic units of education and/or training. Types of courses shall be as follows:

12.1. **Core Course:** Such courses which shall compulsorily be studied by the student as a core requirement of the programme

12.2. **Elective Course:**

Generally, a course which the student can choose from a pool of courses, which is specific or specialized or advanced or supportive to the discipline/subject of study or which provides an extended scope or which enables an exposure of some other discipline/subject/domain to nurture the candidate's proficiency or skill is called an Elective Course

12.2.1 **Discipline Specific Elective (DSE) Course:**

Elective courses offered from the main discipline/subject of study are referred to as Discipline Specific Elective The University may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study)

12.2.2 **Dissertation/Project**

An elective course designed to acquire special/advanced knowledge, such as supplement study/support study to a project work, and a student studies such a course independently with advisory support by a teacher/faculty member is called dissertation/project It is considered a special course involving the application of knowledge in solving/analysing/exploring a real-life situation /difficult problem for a bachelor degree with honours/research A Project/Dissertation work would be of credits, as decided by the competent body The student will do this work under the guidance of a faculty member

12.2.3 **Generic Elective (GE) Course**

An elective course chosen generally from an unrelated discipline/subject to seek exposure of other fields is called a Generic Elective course

12.3. **Ability Enhancement Courses (AEC):**

The Ability Enhancement Courses (AEC) are of two types

- Ability Enhancement Compulsory Courses (AECC)
- Skill Enhancement Courses (SEC) or Vocational Courses

"AECC" courses are the courses based upon the content that leads to Knowledge enhancement, such as,

- Environmental Education

- English/Hindi Communication is mandatory for all disciplines

  SEC courses are value-based/skill-based and may also be designed to enhance skills of the Major Subject They are aimed to provide hands-on training competencies, skills, etc

12.4. The syllabus for a specific programme will be decided by the concerned Board of Studies of the University/Autonomous college based on the curriculum issued by the UGC under LOCF with maximum deviation of 20%

13. STRUCTURE FOR UNDERGRADUATE PROGRAMME: SEMESTER SYSTEM

13.1. First Semester:

A student shall be declared to have successfully completed the first semester if he/she acquires 6 credits in Core Course of the major subject, 6 credits in Core Course of the minor subject, 4 credits in Generic Elective and 4 credits in Ability Enhancement Course (AEC)

13.2. Second Semester (Level 5):

A student shall be declared to have successfully completed the second semester if he/she acquires 6 credits in Core Course of the major subject, 6 credits in Core Course of the minor subject, 4 credits in Generic Elective and 4 credits in Ability Enhancement Course (AEC).

The student can choose his/her major, minor subjects and the generic elective subject if he/she fulfils the pre-requisites prescribed by the concerned Board of Studies. A student passing Grade 12 with science can take admission in Level 5 with major and minor subjects from science/arts/commerce faculty, a student passing Grade 12 with commerce faculty can take major and minor subjects from commerce/arts faculty, whereas a student passing Grade 12 with arts faculty can choose major and minor subjects from arts faculty only. Major and Minor subjects shall belong to the same faculty (which will be called as the Main faculty), whereas generic elective subjects can be chosen from any faculty However, allotment of choices will be subject to the provisions of admission guidelines

13.3. Third Semester:

A student shall be declared to have successfully completed the third semester if he/she acquires 6 credits in Core Courses of the major subject, 6 credits in Core Course of the minor subject, 4 credits in Generic Elective and 4 credits in Skill Enhancement Course (SEC)/Vocational Course

13.4. Fourth Semester (Level 6):

A student shall be declared to have successfully completed the fourth semester, if he/she acquires 6 credits in Core Courses of the major subject, 6 credits in Core Course of the minor subject, 4 credits in Generic Elective and 4 credits in Skill Enhancement Course (SEC)/Vocational Course

The student shall be given a single chance at the entry of level 6 to interchange the major and minor subjects However, in such cases, it will be the students' responsibility to earn additional credits to fulfil the minimum requirement of credits prescribed for the major course Only after fulfilment of such credits he/she will be entitled to earn an Undergraduate Diploma or an Undergraduate Degree

13.5. Fifth Semester:

A student shall be declared to have successfully completed the fifth semester, if he/she acquires 6 credits in Core Courses of the major subject, 4 credits in Skill Enhancement Course (SEC)/Vocational Course, 4 credits in discipline specific elective (DSE) of the major subject and 6 credits in Field Projects/internship/apprenticeship/community engagement and services, preferably related to major and/or minor subjects

13.6. Sixth Semester (Level 7):

A student shall be declared to have successfully completed the sixth semester, if he/she acquires 6 credits in Core Courses of the major subject, 8 credits in discipline specific elective (DSE) of the major subject and 6 credits in Field Projects/ internship/ apprenticeship/ community engagement and services, preferably related to major and/or minor subjects

13.7. Seventh Semester:

Bachelor with Honours/Research

A student shall be declared to have successfully completed the seventh semester with honours, if he/she acquires 6 credits in core courses of the Major subject, 4 credits in Research Methodology, 4 credits in discipline specific elective (DSE) of the major subject, and 6 credits in field project/ internship/ apprenticeship related to the major subject

A student shall be declared to have successfully completed the seventh semester with research, if he/she acquires 6 credits in core courses of the Major subject, 4 credits in Research Methodology, 4 credits in discipline specific elective (DSE) of the major subject, and 6 credits in research project

13.8. Eighth Semester (Level 8):

Bachelor with Honours/Research

A student shall be declared to have successfully completed the eighth semester with honours, if he/she acquires 6 credits in core courses of the Major subject, 4 credits in

dissertation, and 10 credits in field project/ internship/ apprenticeship related to the major subject

A student shall be declared to have successfully completed the eighth semester with research, if he/she acquires 6 credits in core courses of the Major subject, 4 credits in Minor, and 10 credits in research project

The nomenclature of degrees shall strictly conform to the relevant provisions of the act/regulations/guidelines of the UGC

13.9 **Additional Courses:**

In the categories of minor subject, generic elective and skill enhancement courses/vocational courses, a student may earn up to 6 credits per year in the entire tenure of the 3-year undergraduate degree programme after paying due fees for registration and examination

13.10 A student may change the generic elective subject in each year of the 3-year under graduate degree programme

13.11 Table-2: Proposed Structure for Undergraduate Programme: UGC CBCS System for Universities /Autonomous Colleges

Level	Semester	Main Faculty (as per prerequisite)			Any Faculty	Skill Enhancement Course (SEC)	Ability Enhancement Course (AEC)	Field projects/ internship/ apprenticeship/ community engagement and service	Credits	Qualification title (Credit requirement)
		Subject I		Subject II	Subject III					
		Major		Minor	Generic Elective Course	Vocational Course		# Inter/Intra Faculty		
		Core	DSE							
Level 5	1	1 (6 Credits)		1 (6 Credits)	1 (4 Credits)		1 (4 Credits)		6+6+4+4 =20	(40) Undergraduate Certificate in Main Faculty
	2	1 (6 Credits)		1 (6 Credits)	1 (4 Credits)		1 (4 Credits)		6+6+4+4 =20	
Level 6	3	1 (6 Credits)		1 (6 Credits)	1 (4 Credits)	1 (4 Credits)			6+6+4+4 =20	(80) Undergraduate Diploma in Main Faculty
	4	1 (6 Credits)		1 (6 Credits	1 (4 Credits)	1 (4 Credits)			6+6+4+4 =20	
Level 7	5	1 (6 Credits)	1 (4 credits)			1 (4 Credits)		1 Field project/internship/ apprenticeship (6 Credits)	6+4+4+6 =20	(120) Bachelor Degree in Main Faculty
	6	1 (6 Credits)	2 (4 credits) + (4 credits)					1 Field project/internship/ apprenticeship (6 Credits)	6+4+4+6 =20	
Level 8	7	1 (6 Credits)	1 (4 credits)	1 Research Methodology (4 Credits)				1 Field project/internship/ Apprenticeship or Research Project (6 Credits)	6+4+4+6 =20	(160) Bachelor Degree (Honours) in Main faculty *Bachelor Degree (Research) in Main faculty*
	8	1 (6 Credits)		1 (4 Credits)				1 Field project/ internship/ Apprenticeship or *Research Project* (10 Credits)	6+4 +10 =20	
Total		48 credits	16 credits	32 credits	16 credits	12 Credits	08 Credits	28 Credits	160 Credits	

14. Choice to Select the MOOC Courses:

a The UTD/SOS/ Autonomous College can allow up to 40% of the total credits being offered in a particular programme in a semester through the online learning courses provided under SWAYAM platform or any other MOOC platform recognised by the central Government or the state government for credit transfer

b The students will have the choice to opt elective-generic/Skill Enhancement/Ability Enhancement courses from the courses available within the UTD/Autonomous College or in other UTDs of the same universities but from same level of the programmes An alternate choice will also be available to the students to opt for courses from Massive Open Online Courses (MOOCs) available at SWAYAM (Study Webs of Active-Learning for Young Aspiring Minds) platform with the permission of the UTD/autonomous college

c The UTDs/ Autonomous College shall offer elective-generic courses in each programme on merit basis across the disciplines The number of seats in the course will depend on available facilities in the UTD/ Autonomous College

d The students can also opt for a course under DSE of Major subject from Massive Open Online Courses (MOOCs) available at SWAYAM platform

e The University/ Autonomous College will decide to allow the online courses of SWAYAM if

(i) The courses offered on SWAYAM would supplement the teaching-learning process in the institution

(ii) Every student opting for a course available on SWAYAM platform would be required to register for the course at SWAYAM The student will pay the stipulated fee to SWAYAM for registering the course, if required

(iii) While allowing the online learning courses offered by SWAYAM, it shall be ensured that the physical facilities like laboratories, computer facilities and library etc essential for pursuing the courses shall be made available free in adequate measure by the UTD/ Autonomous College The parent institution must designate a course coordinator/facilitator to guide the students throughout the course and facilitate/conduct the lab/practical sessions/examinations

f The requirement of project/dissertation, as notified by the respective UTD/Autonomous College/needs to be undertaken by the candidate for the specified credits The project may be undertaken in any of the National and State Laboratories/Institutes/ Companies /Industries with the approval of UTD/ Autonomous College

15 Requirement of attendance will be as per University Ordinance governing the examinations In general, attendance of at least seventy-five percent of theory lectures and practicals separately will be required in each course to sit in the semester end examination

For special reasons such as prolonged illness deficiency in the percentage of attendance not exceeding fifteen percent of the total number of lectures delivered and practical/sessional held in each course may be condoned by the Vice Chancellor/Principal of autonomous colleges

16 **Examination & Evaluation:**

16.1 Generally, each course will correspond to an examination paper comprising of external and internal evaluations The semester end theory examinations for Major, Minor, Generic and DSE will be 3 hours while vocational (SEC) and Ability Enhancement Course (AEC) will be 2 hours duration The credit structure for theory/practical/tutorial, internal, external examinations and total marks for an examination are shown in the Table 3 in clause 16 15

16.2 The question paper of the external examination should preferably contain long answer, short answer and objective type questions The continuous evaluation of the student will be conducted at three points of time in a semester by conducting three tests of 20 marks each Of these, two must be written tests and the third may be written test Quiz/Seminar/Assignment for theoretical courses Marks obtained in best two tests out of three will be awarded to the student Each student shall have to appear in at least two tests and End Semester Examination, failing which, the student will be awarded Ab Grade in that course In case of Laboratory/Field/Project work based courses, appropriate distribution of marks for Practical Record/Project Report, Practical Semester end exam, viva, if any will be decided by the UTD/Autonomous College In case of internal assessment, the college/UTD/University shall distribute and design their assessment so that at least two tests are conducted in a semester

16.3 UTD/Autonomous colleges may design their mode of internal assessment with due approval from the respective academic council in view of the "Evaluation Reforms in Higher Educational Institutions, 2019" published by the UGC

16.4 Total marks obtained in Semester-End Examination and continuous evaluation will be considered for awarding the grade in the course as explained in 16 5

16.5 The grading will be made on 10-point scale as described below

Letter Grade	Grade Points	Description	Range of Marks (%)
O	10	Outstanding	90-100
A+	9	Excellent	80-89
A	8	Very good	70-79
B+	7	Good	60-69
B	6	Above Average	50-59
C	5	Average	40-49
P	4	Pass	35-39
F	0	Fail	0-34
Ab	0	Absent	Absent

16.6 In case statutory bodies of the programme issue the guidelines regarding the minimum passing percentage of marks, then grading will be done in the following manner

If the marks obtained by the student in a course are less than the minimum cut-off percentage of marks, then F grade will be awarded Otherwise, the grades will be awarded as per above-mentioned table

16.7 If a student obtains F or Ab grade in any course(s), he/she will be treated as having failed in the course(s) He/she has to reappear in the examinations of that course(s) as and when conducted by the University/UTD/Autonomous college Marks obtained earlier in continuous assessment may be carried forward and added to the marks obtained in repeat semester-end examination to decide the grade in the repeat course(s)

16.8 The student will be promoted to the next semester if he/she secures at least half of the total credits in a semester In case the student secures less than half of the total credits in any semester, then the student will be declared fail in that semester and he/she will be asked to repeat the entire semester and that semester will be treated as zero semester In such cases the student will not be promoted to the next semester

If a student passes in all the courses offered in any semester, then the student will be declared pass in that semester If a student secures at least half of the total credits in a semester and fails in some courses offered in that semester then he/she will be provisionally promoted to the next semester with ATKT (Allowed To Keep Term) in those courses in which he/she fails

If the student fails to pass all the courses in the next ATKT examination the provisional promotion will be terminated but he/she will be given second chance to pass the failed courses Suppose the student does not successfully complete the concerned

semester even after the aforesaid second chance In that case, she/he shall be treated as fail in that semester and will be asked to repeat the entire semester and that semester will be treated as zero semester

If the 4th year of undergraduate programme is not offered in the present autonomous college, admissions in another autonomous college/UTD within the same University shall be allowed in cases of provisional promotions to the 4th year of the undergraduate programme

16.9 Repetition of a theory/practical course is allowed only to those candidates who get F or Ab grade in the course or has failed in the semester The student has to pay the prescribed fee for repeating the course

16.10 On account of valid reasons, a student may withdraw from a semester In such a case, that semester will be treated as zero semester

16.11 In case of zero semester, the student will not be promoted to the next semester till he/she clears that semester The University may allow such a student to re-register in that semester in the coming semesters The student has to pay semester fee again in such case and may not be eligible for scholarships If the student withdraws within one month from starting the academic semester, the semester fee will not be charged again

16.12 The provision for review of answer book in semester system will be available as per the existing rules of the University/Autonomous college

16.13 The theoretical and practical courses can be repeated whenever offered or conducted by the University/UTD/Autonomous college but within the maximum duration of the programme He/she can avail multiple repeat attempts to pass the course

16.14 Applicable to UTDs in the same universities The UTD, where students from other UTDs are registered for choice based elective course(s), will send the Grade to the concerned UTD where the student is enrolled. The result will be declared by the UTD where the student has taken admission

16.15. Table 3: Structure of Credit Course (Semester System)

	Course (Credit)	Course Type	Credits Allocated			Distribution of Theory Marks		Distribution of Practical Marks		
			Theory	Practical	Tutorial	Internal (Through CCE)	External (End Semester Exam)	Internal	External (End Semester Practical Exam)	Tutorial Marks
1	Core (6)	Type-1	6	NA	NA	40	60	NA	NA	NA
2	Core (6)	Type-2	4	2	NA	40	60	40	60	NA
3	Core (6)	Type-3	2	4	NA	40	60	50 (Through CCE)	50	NA
4	Core (6)	Type-4	5	NA	1	40	60	NA	NA	100
5	GE/DSE/SEC (4)	Type-1	4	0	NA	40	60	NA	NA	NA
6	GE/DSE/SEC (4)	Type-2	3	1 *(P,T,W,etc)*	NA	40	60	NA	100	NA
7	DSE/SEC (4)	Type-3	1	3 *(P,T,W,etc)*	NA	40	60	50 (Through CCE)	50	NA
8	DSE/SEC (4)	Type-4	3	NA	1	40	60	NA	NA	100
9	AECC (4)	Type-1	4	NA	NA	40	60	NA	NA	NA
10	Field-Projects / Internship / Apprenticeship / Community engagement & service (6/10)	NA	(i) Field-Projects / Internship / Apprenticeship / Community engagement & service 4/6 Credits *(75 Marks)* (ii) Evaluation of Report 2/4 Credit *(25 Marks)*							
11	Research Methodology (4)	Type-4	3	NA	1	40	60	NA	NA	100
12	Dissertation/Research Project (4/6/10)	NA	Evaluation of Thesis 3/4/6 Credits *(50 Marks)* + Pre-submission viva-voce 1/1/2 Credit *(25 Marks)* + External viva-voce 0/1/2 Credit *(25 Marks)*							

P-Practical, T-Tutorial, W-Workshop

17 **Evaluation and Certification of MOOCs and Vocational courses:**

The guidelines of the University/SWAYAM portal/UGC shall be followed for evaluation and certification of MOOCs, Vocational courses, Field-Projects-Internship/Apprenticeship/Community engagement & service/Research Project

18. **Calculation of SGPA /CGPA:**

18.1 Semester Grade Point Average (SGPA) is a measure of performance of the student in a semester. It is the ratio of total credit points secured by a student in various courses registered in that semester and the total course credits taken during that semester, i.e

$$SGPA(S_i) = \frac{\sum(C_i \, X \, G_i)}{\sum C_i}$$

where S_i is the i^{th} year, C_i is the number of credits of the i^{th} course in the semester (S_i) and G_i is the grade point scored by the student in the i^{th} course

18.2 The Semester Grade Point Average SGPA) and Cumulative Grade Point Average (CGPA) will be calculated as weighted average of credit points secured by the student, except the credits of additional courses if any. The SGPA and CGPA shall be rounded off up to 2 decimal places and reported in the grade sheet

Calculation of SGPA

Course	Credits (C)	Grade	Grade Point (GP)	Credit Points (C x GP)	SGPA (Total Credit Point/Total Credit)
Course 1	6	A	8	48	146/20 = 7.30
Course 2	6	C	5	30	
Course 3	4	B+	7	28	
Course 4	4	O	10	40	
TOTAL	20		-	146	

18.3 CGPA is a measure of the overall cumulative performance of a student over all the semesters completed. The CGPA is the ratio of total credit points secured by a student in various courses in all the semesters completed and the sum of the credits of all courses in all the semesters completed. The CGPA will be calculated as per follows

$$CGPA = \frac{\sum[C_i \, X \, SGPA(S_i)]}{\sum C_i}$$

where SGPA (S_i) is the SGPA of the i^{th} year and C_i is the total number of credits in the i^{th} semester

Calculation of CGPA:

Semester	Credits	SGPA	Credits x AGPA	CGPA
1	20	7 50	150 00	CGPA = Total (Credits x SGPA) / Total Credits
2	20	7 58	151 60	
3	20	7 32	146 40	
4	20	8 34	166 80	CGPA = 1229 60 / 160 = 7 685 = 7 69 (rounded off to second decimal point)
5	20	7 58	151 60	
6	20	7 32	146 40	
7	20	8 34	166 80	
8	20	7 50	150 00	
Total	160		1229 60	

19. On completing all requirements for the award of the undergraduate certificate/diploma/degree, the CGPA will be calculated, and this value will be indicated on the certificate/diploma/degree. The 3-years (6 semester) and 4-years (8 semester) undergraduate degrees should also indicate the Division obtained as per follows

Division	Criterion
First division with distinction	The candidate has earned minimum number of credits required for the award of the degree with CGPA of 8 00 or above
First division	The candidate has earned minimum number of credits required for the award of the degree with CGPA of 6 50 above but less than 8 0
Second division	The candidate has earned minimum number of credits required for the award of the degree with CGPA of 5 00 or above but less than 6 50
Pass	The candidate has earned minimum number of credits required for the award of the degree with CGPA of 4 00 or above but less than 5 00

The conversion of CGPA into percentage will be as follow to facilitate its application in other academic matters

Equivalent Percentage = CGPA x 10

The percentage will be rounded off up to the second decimal point

20. The student will be examined by the University as per the prevailing syllabus and scheme of examination

21. The candidate shall be awarded a certificate/diploma/degree when he/she successfully earns the minimum required credits for the certificate/diploma/degree

22. A Grade Card shall be issued to all the students after every semester based on the grades earned The course details (code, title, number of credits, grade secured) along with SGPA of every semester and CGPA earned till that Academic Year will be displayed in the grade card

23. Grade sheets will be developed by the University/autonomous college based on model Annexures S1 to S4

24. **Credit Transfer:**

24.1 The credit transfer shall be implemented as per the policy of the University framed in accordance with the guidelines issued by the UGC from time to time

24.2 The member institutions of the Academic Bank of Credit established vide University Grants Commission (Establishment and Operation of Academic Bank of Credits in Higher Education) Regulations, 2021 shall accept and transfer the credits as per the provisions of this regulation as amended from time to time

24.3 Except for the cases of provisional promotions, the universities established by M P University Act, 1973 shall facilitate credit transfer of students between them However, the student may be required to fulfil some eligibility criteria, drawing parity for a course, framed by the University in which the student seeks admission

25. If any question arises relating to the interpretation of the provisions of this ordinance, it shall be referred to State Govt whose decision thereon shall be applicable

26. The guidelines, related to this programme, issued by the statutory bodies e g, UGC/AICTE/BCI/NCTE/PCI/RCI issued from time to time will be adopted for implementation

27. In matters not covered under this Ordinance, general rules of the University shall be applicable, otherwise, the state government's directions shall be applicable

28. If UGC notifies any change in future in its Regulations in this regard, the same will be incorporated in the existing Ordinance with the approval by the Kuladhipati on the recommendation of the Higher Education Department.

SAMPLE COPY FOR FOR FIRST TO FIFTH SEMESTER

ANNEXURE-S-I

Logo in water mark

University Logo

Name of the University

GRADE SHEET

Name of the Institute

Address of the Institute

Name of the Programme

Batch	Year
Enrolment No.	Roll No.
Name of the Student	Examination
Father's/Husband's Name	Mother's Name.

Course Code	Course Title	Credits	Grade	Grade Point	Credit Points (Credits x Grade Point)
	Course 1	6	A	8	48
	Course 2	6	C	5	30
	Course 3	4	B-	7	28
	Course 4	4	O	10	40
TOTAL		20	-		146
SGPA		146/20			7.30

* Grade in Repeat Examination

RESULT SEMESTER WISE					
SEMESTER	I	II	III	IV	V
TOTAL CREDITS					
OBTAINED CREDITS					
ADDITIONAL CREDITS					
SGPA					
ATTEMPT					
RESULT					

SGPA Semester Grade Point Average

CGPA Cumulative Grade Point Average Equivalent Percentage = CGPAx10

Date of Result

Assistant Registrar/Controller Examination/Head UTD

SAMPLE COPY FOR FOR SIXTH SEMESTER

Logo in water mark

ANNEXURE-S-2

University Logo

Name of the University

GRADE SHEET

Name of the Institute

Address of the Institute

Name of the Programme

Batch 2021-25	Year
Enrolment No	Roll No
Name of the Student	Examination
Father's/Husband's Name	Mother's Name

Course Code	Course Title	Credits	Grade	Grade Point	Credit Points (Credits x Grade Point)
	Course 1	6	A	8	48
	Course 2	6	C	5	30
	Course 3	4	B+	7	28
	Course 4	4	O	10	40
TOTAL		20	-		146
SGPA		146/20			7.30

* Grade in Repeat Examination

RESULT SEMESTER WISE						
SEMESTER	I	II	III	IV	V	VI
TOTAL CREDITS						
OBTAINED CREDITS						
ADDITIONAL CREDITS						
SGPA						
ATTEMPT						
RESULT						

SGPA Semester Grade Point Average

FINAL RESULT PASS			
TOTAL CREDITS	CGPA	EQUIVALENT PERCENTAGE	DIVISION

CGPA Cumulative Grade Point Average Equivalent Percentage = CGPAx10

Date of Result

Assistant Registrar/Controller Examinations

SAMPLE COPY FOR FOR SEVENTH SEMESTER

ANNEXURE-S-3

Logo in water mark

University Logo

Name of the University

GRADE SHEET

Name of the Institute

Address of the Institute

Name of the Programme

Batch	Year
Enrolment No	Roll No
Name of the Student	Examination
Father's/Husband's Name	Mother's Name

Course Code	Course Title	Credits	Grade	Grade Point	Credit Points (Credits x Grade Point)
	Course 1	6	A	8	48
	Course 2	6	C	5	30
	Course 3	4	B+	7	28
	Course 4	4	O	10	40
TOTAL		20	-		146
SGPA		146/20			7.30

* Grade in Repeat Examination

RESULT SEMESTER WISE							
SEMESTER	I	II	III	IV	V	VI	VII
TOTAL CREDITS							
OBTAINED CREDITS							
ADDITIONAL CREDITS							
SGPA							
ATTEMPT							
RESULT							

SGPA: Semester Grade Point Average

CGPA: Cumulative Grade Point Average Equivalent Percentage = CGPAx10

Date of Result

Assistant Registrar/Controller Examination/Head, UTD

SAMPLE COPY FOR FOR EIGHTH SEMESTER

Logo in water mark

ANNEXURE-S-4

University Logo

Name of the University

GRADE SHEET

Name of the Institute

Address of the Institute

Name of the Programme

Batch 2021-25	Year
Enrolment No	Roll No
Name of the Student	Examination
Father's/Husband's Name	Mother's Name

Course Code	Course Title	Credits	Grade	Grade Point	Credit Points (Credits x Grade Point)
	Course 1	6	A	8	48
	Course 2	4	C	5	20
	Course 3	10	B+	7	70
TOTAL		20			138
SGPA		138/20			6.90

* Grade in Repeat Examination

RESULT SEMESTER WISE								
SEMESTER	I	II	III	IV	V	VI	VII	VIII
TOTAL CREDITS								
OBTAINED CREDITS								
ADDITIONAL CREDITS								
SGPA								
ATTEMPT								
RESULT								

SGPA Semester Grade Point Average

FINAL RESULT PASS			
TOTAL CREDITS	CGPA	EQUIVALENT PERCENTAGE	DIVISION

CGPA Cumulative Grade Point Average Equivalent Percentage = CGPAx10

Date of Result

Assistant Registrar/Controller Examinations

Vice-chancellors

(Prof. Sangeeta Shukla) (Prof. R. J. Rao) (Prof. Kapil Dev Mishra) (Prof. T. N. Thapak)

Ordinance 14 B

Ordinance for three/four years Undergraduate Degree (CBCS Annual Mode)

(As per the Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions" issued by UGC, New Delhi under National Education Policy 2020)

1. The provisions of this Ordinance shall be applicable from the academic session 2021-22
2. The provisions of this Ordinance shall apply to the three-year Bachelor's degree or four-year Bachelor's degree (Honours/Research) undergraduate programmes such as Bachelor of Arts (B A), Bachelor of Science (B Sc), Bachelor of Commerce (B Com), Bachelor of Computer Application (B C A), Bachelor of Business Administration (B B A), Bachelor of Home Science(B H Sc) and other similar Undergraduate programmes notified by the University
3. The Ordinance shall be applicable to all such programmes being run by the University in its Teaching Departments (UTDs)/SOS (School of Studies) and its affiliated colleges including autonomous colleges for their regular as well as non-collegiate (private) students. Autonomous Colleges/UTDs may opt for semester system under Ordinance 14A
4. Admission rules and guidelines for admission to these programmes will be framed by the State Government for admission in colleges and by the University for admission in its UTDs SOS. Admission to the 4-th year (Level 8) shall be available only in the institutions which are offering 4-year Undergraduate Programme. Autonomous colleges with NAAC grade "A" or above can frame their admission guideline completely based on merit subject to the reservation policy of the government
5. Students who have successfully completed Grade 12 School Leaving Certificate from Board of Secondary Education Madhya Pradesh, Bhopal or an equivalent examination from any other board recognised by the State Government/University will be eligible for admission to these undergraduate programmes
6. The admission shall be made on merit calculated on the basis of criteria notified by the state government/university, as the case may be, keeping in view the guidelines/norms in this regard issued by the UGC and other statutory bodies concerned and taking into account the reservation policy issued by the government from time to time
7. Student enrolment in a programme/course shall be restricted to the seats allotted by the University/State Government

8. The in-take capacity shall be determined in advance by the university/autonomous college in accordance with the guidelines/norms in this regard issued by the State Government/UGC and other statutory bodies concerned so that the same could be suitably incorporated in the admission guidelines for the information of all concerned and uploaded on the institutional website or admission portal of Department of Higher Education.

9. Depending upon the academic and physical facilities available the university/college/autonomous college may earmark seats to a maximum of 10% of the seats sanctioned for the previous year of the programme for lateral entrants in the ***second year/third year/fourth year*** of a first-degree programme if the student has successfully completed the first year/second year/third year of the same programme in any institution and wants to re-enter into the programme after a break in studies.

10. To enable multiple entry and exit points in the academic programmes, qualifications such as certificate, diploma, and degree are organized in a series of levels in an ascending order from level 5 to level 8. Level 5 represents certificate and level 8 represents Bachelor Degree (Honours/Research) (Table 1). The four-year undergraduate programme shall comprise courses under following subjects Categories

    i) Major Subject **(56 credits)**
    ii) Minor Subject **(26 credits)**
    iii) Generic Elective **(18 credits)**
    iv) **Skill Enhancement Courses/Vocational Courses (12 credits)**
    v) Ability Enhancement Courses/Foundation Courses **(24 credits)**
    vi) Field projects/internship/apprenticeship/community engagement and service **(24credits)**

    N B For B B A / B C A /B H Sc and like programmes, a group/subject shall be chosen as Major/Minor/Generic Elective

    Qualification and Credit Requirements are given in Table 1. The *entry and exit* options for students, who enter the undergraduate programme, are as follows

    1st Year

    Entry 1 The entry requirement for Level 5 is successful completion of Class 12 from M P Board of Secondary Education, Bhopal or an equivalent examination from any other board recognised by the State Government/University. A programme of study leading to entry into the first year of the Bachelor's degree is open to those who have met the admission requirements.

Exit 1: If a student pass all the courses of Level 5 and earns requisite number of credits, the student will become entitled for *Undergraduate certificate in the faculty of her/his Major Subject*. If she/he wants to exit, can exit the programme with *Undergraduate certificate* in hand.

2nd Year

Entry 2. The entry requirement for *Level 6 is successful completion of Level 5*. A programme of study leading to the second year of the Bachelor's degree is open to those who have met the admission requirements

Exit 2: If a student passes all the courses of Level 5&6 and earns requisite number of credits, the student becomes entitled for *Undergraduate Diploma in the faculty of her/his Major Subject*. If she/he wants to exit, can exit the programme with *Undergraduate Diploma* in hand. A diploma requires 80 credits with 40 credits in each of the two levels

3rd Year

Entry 3. The entry requirement for *Level 7 is successful completion of Level 5&6*. A programme of study leading to the Bachelor's degree is open to those who have met the admission requirements

Exit 3: If the student passes all the courses of Level 5 to 7 i.e. First, Second and Third years and earns requisite number of credits, the student becomes entitled for the *Undergraduate Degree in the faculty of her/his Major Subject.* A Bachelor's degree requires 120 credits from level 5 to 7, with 40 credits at level 5, 40 credits at level 6, and 40 credits at level 7

4th Year

Entry 4. An individual seeking admission to a *Bachelor's degree (Honours/Research) (Level 8)* in a specified field of learning would have completed all requirements of the relevant *three-year bachelor degree (Level 7)*. After completing the requirements of a three-year Bachelor's degree, candidates who meet a minimum CGPA of 7.5 shall be allowed to continue studies in the fourth year of the undergraduate programme to pursue and complete the Bachelor's (Honours/ Research)degree

Exit 4: If the student passes all the courses of level 5 to 8 and earns the requisite credits, the student becomes entitled for *Undergraduate Degree (Honours/Research) in the faculty of her/his the Major Subject*. A Bachelor's degree (Honours/Research) requires a

total of 160 credits from level 5 to 8, with 40 credits at level 5, 40 credits at level 6, 40 credits at level 7, and 40 credits at level 8

Table-1: Qualification Type and Credit Requirements

Levels	Qualification title	Credit requirements
Level 5	Undergraduate Certificate in the faculty of the Major Subject for those who exit after the first year of the undergraduate programme (Programme duration first year of the undergraduate programme)	40
Level 6	Undergraduate Diploma in the faculty of the Major Subject for those who exit after two years of the undergraduate programme (Programme duration First two years of the undergraduate programme)	80
Level 7	Bachelor' Degree in the faculty of the Major Subject (Programme duration Three years)	120
Level 8	Bachelor' Degree in the faculty of Major Subject (Honours/Research) (Programme duration Four years)	160

The credits will be awarded by the university The credit can be calculated as follows

- One hour of theory or one hour of tutorial or two hours of laboratory work per week for a duration of 15 weeks resulting in the award of **one credit.**
- Credits for internship shall be ***one credit per week*** of internship, subject to a ***maximum of 12 credits in a year***

11. The minimum duration of the *undergraduate degree programme* shall be of three academic years whereas that of *undergraduate degree leading to Honours/Research* shall be of four academic years
    - A student who leaves the course anytime in the middle of the programme will retain the credits earned so far which will be restored/transferred as and when she/he enters the programme again

    The maximum duration for completion of *Undergraduate Degree* and *Undergraduate Degree (Honours/Research)* programme for regular students shall be of 6 and 8 years respectively, there shall be no such bar for non-collegiate (private) students

12. TYPES OF COURSES

Each of the subject/categories(i) to (v) as specified in clause 10 shall comprise of courses. Courses are the basic units of education and/or training. Types of courses shall be as follows.

12.1. CoreCourse:

Such courses which shall compulsorily be studied by the student as a core requirement of the programme

12.2. Elective Course:

Generally a course, which can be chosen by the student from a pool of courses, which is specific or specialized or advanced or supportive to the discipline/subject of study or which provides an extended scope or which enables an exposure of some other discipline/subject/domain to nurture the candidate's proficiency or skill is called an Elective Course

12.2.1 **Discipline Specific Elective (DSE) Course:**

Elective courses offered from the main discipline/subject of study are referred to as Discipline Specific Elective The University may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study)

12.2.2 **Dissertation/Project**

An elective course designed to acquire special/advanced knowledge,such as supplement study/support study to a project work, anda student studiessuch a course on his own with an advisory support by a teacher/faculty member is called dissertation/project It is considered as a special course involving application of knowledge in solving/analysing/exploring a real life situation /difficult problem for bachelor degree with honours/research A Project/Dissertation work would be of credits, as decided by the competent body The student will do this work under the guidance of afaculty member

12.2.3 **Generic Elective (GE) Course**

An elective course chosen generally from an unrelated discipline/subject with an intention to seek exposure of other field is called a Generic Elective course

P.S. *A core course offered in a discipline/subject may be treated as an elective by other discipline/subject and vice-versa and such electives may also be referred to as Generic Elective Course*

12.3. **Ability Enhancement Courses (AEC):**

The Ability Enhancement Courses (AEC) are of two types

- Ability Enhancement Compulsory Courses (AECC) or FoundationCourses
- Skill Enhancement Courses (SEC) orVocational Courses

"AECC" courses are the courses based upon the content that leads to Knowledgeenhancement, such as

- Environmental Education
- English/Hindi Communication are mandatory for all disciplines

SEC courses are value-based/skill-based and may also be designed to focus on enhancement of skills pertaining to the Major Subject. They are aimed to provide hands-on-training, competencies, skills, etc

12.4. The syllabus for a specific programme willbe decided by the concerned Board of Studies of the University/Autonomous college/Central Board of Studies (CBS) constituted as per Clause 24A of the M P University Act, 1973. The allowed deviation from the CBS prescribed syllabi for BOS of University/autonomous colleges will be 20% at the maximum

13. STRUCTURE FOR UNDERGRADUATE PROGRAMME:ANNUALSYSTEM

13.1. **First Year (Level 5):**

A student shall be declared to have successfully completed the Level 5 if he/she acquires 12 credits in core courses of the major subject, 6 credits in core course of the minor subject, 6 credits in generic elective, 4 credits in SEC/Vocational Course, 8 credits in AEC/Foundation Course, and 4 credits in Field Projects/internship/apprenticeship/community engagement and services.

The student can choose his/her major, minor subjects and the generic elective subject if he/she fulfils the pre-requisites prescribed by the concerned Board of Studies. A student passing Grade 12 with science can take admission in Level 5 with major and minor subjects from science/arts/commerce faculty, a student passing grade 12 with commerce faculty can take major and minor subjects from commerce arts faculty whereas a student passing grade 12th with arts faculty can choose major and minor subjects from arts faculty only. Major and Minor subjects shall belong to the same faculty (which will be called as the Main faculty), whereas generic elective at level can be chosen from any faculty. However, allotment of choices will be subject to the provisions of admission guidelines

13.2. Second Year (Level 6):

A student shall be declared to have successfully completed the Level 6, if he/she acquires 12 credits in core courses of the major subject, 6 credits in core course of the minor subject, 6 credits in generic elective, 4 credits in SEC/Vocational Course, 8 credits in AEC/Foundation Course, and 4 credits in Field Projects/internship/apprenticeship/community engagement and services

The student shall be given the single chance at the entry of level 6 to interchange the major and minor subjects, however, in such cases, it will be responsibility of the students to earn additional credits to fulfil the minimum requirement of credits prescribed for the major subject, and only after fulfilment of such credits he/she will be entitled to earn an Undergraduate Diploma or an Undergraduate Degree

13.3 Third Year (Level 7):

A student shall be declared to have successfully completed the Level 7, if he/she acquires 12 credits in discipline specific elective courses of the major subject, 6 credits in core course of the minor subject, 6 credits in generic elective, 4 credits in SEC/Vocational Course, 8 credits in AEC/Foundation Course, and 4 credits in Field Projects/internship/apprenticeship/community engagement and services preferably related to major and/or minor subjects

13.4. Fourth Year (Level 8):

(a) Bachelor with Honours

A student shall be declared to have successfully completed the Level 8 for Bachelor with Honours degree, if he/she acquires 20 credits in discipline specific elective courses of the major subject, 4 credits course in Research Methodology, 4 credits in dissertation, and 12 credits in internship/apprenticeship related to the major subject

(b) Bachelor with Research

A student shall be declared to have successfully completed the Level 8 for Bachelor with Research degree, if he/she acquires 20 credits in discipline specific elective courses of the major subject, 4 credits course in Research Methodology, 4 credits in minor subject, and 12 credits for Research Projects and disciplinary/interdisciplinary Undergraduate thesis related to the major subject

The nomenclature of degrees shall strictly conform to the relevant provisions of the act/regulations/guidelines of the UGC

13.5 **Additional Courses:**

In the categories of minor subject, generic elective and skill enhancement courses/vocational courses, a student may earn up to additional 6 credits per year in the entire tenure of 3-year undergraduate degree programme

13.6. A student may change the subject of the generic elective in each year of the 3-year undergraduate degree programme

13.7. Table 2: Proposed Structure for Undergraduate Programme: Annual System

Level	Year	Main Faculty (as per prerequisite)		Any Faculty	Skill Enhancement Course (SEC)	Ability Enhancement Course (AEC)	Field projects/internship/apprenticeship/community engagement and service	Credits in a Year	Qualification title (Credit requirement)
		Subject I	Subject II	Subject III					
		Major	Minor	Generic Elective Course	Vocational Course	Foundation Course	# Inter/Intra Faculty		
		No. of courses (Credits)	No. of courses (Credits)	No. of courses (Credits)	No. of courses (Credits)	No. of courses (Credits)	No. of courses (Credits)		
Level5	1	1 (6 Credits) 1 (6 Credits)	1 (6 Credits)	1 (6 Credits)	1 (4 Credits)	2 (4 Credits) 2 (4 Credits)	1# (4 Credits)	6x4+4x4 =40	(40) Undergraduate Certificate in Main Faculty
Level6	2	1 (6 Credits) 1 (6 Credits)	1 (6 Credits)	1 (6 Credits)	1 (4 Credits)	2 (4 Credits) 2 (4 Credits)	1# (4 Credits)	6x4+4x4 =40	(80) Undergraduate Diploma in Main Faculty
Level7	3	1 (6 Credits) 1 (6 Credits)	1 (6 Credits)	1 (6 Credits)	1 (4 Credits)	2 (4 Credits) 2 (4 Credits)	1# (4 Credits)	6x4+4x4 =40	(120) Bachelor Degree in Main Faculty
Level8	4	2 (6 Credits) 2 (4 Credits)	1 Research Methodology (4 Credits) 1 (4 Credits)				1 (6 Credits) Internship/Apprenticeship *Or Research Project* 1 (6 Credits) Internship/Apprenticeship *Or Research Project*	6x4+4x4 =40	(160) Bachelor Degree (Honours) in Main Faculty *Bachelor Degree (Research) in Main Faculty*
Total		56 Credits	26 Credits	18 Credits	12 Credits	24 Credits	24 Credits	160 Credits	

14. Choice to Select the MOOC Courses:

a The College/UTD/autonomous college can allow up to 40% of the total credits being offered in a particular programme in a year through the online learning courses provided under SWAYAM platform or any other MOOC platform recognised by the central government or the state government for credit transfer

b The students will have the choice to opt elective-generic/Skill Enhancement/Ability Enhancement courses from the courses available within the College/UTD autonomous college or in other UTDs of the same universities but from same level of the programmes. An alternate choice will also be available to the students to opt courses from Massive Open Online Courses (MOOCs) available at SWAYAM (Study Webs of Active-Learning for Young Aspiring Minds) platform with the permission of the College/UTD

c The College/UTDs shall offer elective-generic courses in each programme on rotation basis across the disciplines. The number of seats in the course will depend on available facilities in the College/UTD

d The students can also opt a course under DSE of Major subject from Massive Open Online Courses (MOOCs) available at SWAYAM platform

e The College/University will take a decision for allowing the online courses of SWAYAM if

(i) The courses offered on SWAYAM would supplement the teaching-learning process in the institution

(ii) Every student opting a course available on SWAYAM platform would be required to register for the course at SWAYAM. The student will pay the stipulated fee to SWAYAM for registering the course, if required

(iii) While allowing the online learning courses offered by SWAYAM, it shall be ensured that the physical facilities like laboratories, computer facilities and library etc. essential for pursuing the courses shall be made available free in adequate measure by the College/UTD/autonomous college. The parent institution must designate a course coordinator/facilitator to guide the students throughout the course and to facilitate/conduct the lab/practical sessions/examinations

f The requirement of project/dissertation, as notified by the respective College/UTD/autonomous college need to be undertaken by the candidate for the specified credits. The project may be undertaken in any of the National and state

Laboratories/Institutes/Companies/Industries with the approval of College/ UTD/autonomous college

15 Requirement of attendance will be as per University Ordinance governing the examinations In general attendance of atleast seventy-five percent of theory lectures and practicals separately will be required in each course to sit in the year end examination

For special reasons such as prolonged illness deficiency in percentage of attendance not exceeding fifteen percent of the total number of lectures delivered and practical/sessional held in each course may be condoned by the Vice Chancellor/Principal of autonomous colleges

16. Examination & Evaluation:

16.1 Generally each course will correspond to an examination paper comprising of external and internal valuations The year end theory examinations for Major subject, Minor subject and Generic Elective will be of 3 hours while Vocational (SEC) and Foundation Course (AECC) will be of 2 hours duration The credit structure for theory/practical/tutorial, internal, external examinations and total marks for an examination are shown in the Table 3 in clause 16 14.

16.2 The question paper of the external examination should preferably contain long answer, short answer and objective type questions Where the internal assessment is for 30 marks, the continuous evaluation of the student will be conducted at four times (one in each quarter of the academic session) by conducting four tests of 10 marks each Of these, three must be written tests and the fourth may be written test /Quiz/Seminar/Assignment for theoretical courses Marks obtained in best three tests out of four will be awarded to the student Each student shall have to appear in at least three tests and Year End Examination. failing which, the student will be awarded Ab Grade in that course In case of Laboratory/Field/Project work based courses, appropriate distribution of marks for Practical Record/Project Report, Practical year-end exam. viva, if any be decided by the University/autonomous college In case of internal assessment of 50 marks, the college/UTD/University shall distribute and design their assessment so that at least one test is conducted in a quarter of an academic year

16.3 UTD/Autonomous colleges may design their own mode of internal assessment with due approval from respective academic council in view of the "Evaluation Reforms in Higher Educational Institutions, 2019" published by the UGC

16.4 Total marks obtained in Year-End Examination and continuous evaluation will be considered for awarding the grade in the course as explained in 16.5

16.5 The grading will be made on 10-point scale as described below

Letter Grade	Grade Points	Description	Range of Marks (%)
O	10	Outstanding	90-100
A+	9	Excellent	80-89
A	8	Very good	70-79
B+	7	Good	60-69
B	6	Above Average	50-59
C	5	Average	40-49
P	4	Pass	35-39
F	0	Fail	0-34
Ab	0	Absent	Absent

16.6 In case, statutory bodies of the programme issue the guidelines regarding minimum passing percentage of marks, then grading will be done in the following manner

If the marks obtained by the student in a course are less than the minimum cut-off percentage of marks, then F grade will be awarded, otherwise the grades will be awarded as per above mentioned table

16.7 If a student obtains For Ab grade in any course(s), he/she will be treated to have supplementary/failed in the course(s). He/she has to reappear in the examinations of that course(s) as and when conducted by the University/Autonomous college. Marks obtained earlier in continuous assessment may be carried forward and added to the marks obtained in repeat year-end examination to decide the grade in the repeat course(s)

16.8 The student will be promoted to the next year if he/she secures at least half of the total credits (viz. 20 credits out of 40 credits in annual system) in a year. In case the student secures less than half of the total credits in any year, then the student will be declared fail in that year and he/she will be asked to repeat the entire year and that year will be treated as zero year. In such cases the student will not be promoted to the next year.

If a student passes in all the courses offered in any year then will be declared pass in that year. If a student secures at least half of the total credits in a year and fails in some courses offered in that year then he/she will be provisionally promoted to the next year with supplementary in those courses in which he/she fails

If the student fails to pass all the courses in the next supplementary examination, the provisional promotion will be terminated, but he/she will be given second chance to pass the failed courses. If the student does not successfully complete the concerned year even after the aforesaid second chance, she/he shall be treated as fail in that year and will be asked to repeat the entire year and that year will be treated as zero year.

If the 4-th year of undergraduate programme is not offered in the present college, admissions in another college within the same university shall be allowed in cases of provisional promotions to the 4-th year of the undergraduate programme.

16.9 Repetition of a theory/practical course is allowed only to those candidates who get F or Ab grade in the course or has failed in the year. The student has to pay the prescribed fee for repeating the course.

16.10 On account of valid reasons, a student may withdraw from a year. In such case that year will be treated as zero year.

16.11 In case of zero year, the student will not be promoted to the next year till he/she clears that year. The university may allow such a student to re-register in that year in the coming years. The student has to pay annual fee again in such case and and may not be eligible for scholarships. If the student withdraws within one month from starting of the academic year then annual fee will not be charged again.

16.12 The provision for revaluation of answer book in annual system will be available as per the existing rules of the University.

16.13 The theoretical and practical courses can be repeated whenever offered or conducted by the University/UTD but within maximum duration of the programme. He/she can avail multiple repeat attempts to pass the course.

16.14. Table 3: Structure of Credit Course (Yearly System)

SN	Course (Credit)	Course Type	Credits Allocated			Distribution of Theory Marks		Distribution of Practical Marks		
			Theory	Practical	Tutorial	Internals (Through CCE)	External (Year-End Exam)	Internal	External (Year-End Practical Exam)	Tutorial Marks
1	Core/GE/DSE (6)	Type-1	6	NA	NA	30	70	NA	NA	NA
2	Core/DSE/GE (6)	Type-2	4	2	NA	30	70	NA	100	NA
3	Core/DSE/GE (6)	Type-3	2	4	NA	30	70	50 (Through CCE)	50	NA
4	Core/DSE/GE (6)	Type-4	5	NA	1	30	70	NA	NA	100
5	DSE/SEC (Vocational Courses) (4)	Type-1	4	0	NA	30	70	NA	NA	NA
6	DSE/SEC (Vocational Courses) (4)	Type-2	3	1*(P,T,W,etc)*	NA	30	70	NA	100	NA
7	DSE/SEC (Vocational Courses) (4)	Type-3	1	3*(P,T,W,etc)*	NA	NA	100	50 (Through CCE)	50	NA
8	DSE/SEC (Vocational Courses)(4)	Type-4	3	NA	1	30	70	NA	NA	100
9	AECC (Foundation Course) (4)	Type-1	4	NA	NA	NA	100	NA	NA	NA
10	AECC (Foundation Course) (4)	Type-2	2	2*	NA	NA	50	NA	50	NA
11	Field-Projects / Internship / Apprenticeship / Community engagement & service (4/6)	NA	(i) Field-Projects / Internship / Apprenticeship / Community engagement & service 3/4 Credits *(75 Marks)* (ii) Evaluation of Report 1/2Credit *(25 Marks)*							
12	Research Methodology(4)	Type-4	3	NA	1	30	70	NA	NA	100
13	Dissertation/Research Project (4/6)	NA	Evaluation of Thesis 2/4 Credits *(50Marks)*+ Pre submission viva-voce 1/1Credit*(25 Marks)*+ External viva-voce 1/1 Credit*(25 Marks)*							

P-Practical, T-Training, W-Workshop

Note: "Papers like (i) Yoga& Meditation, (ii) Digital Awareness & (iii) Personality Development and Character Building, should have 50% practical component in the evaluation process. Environmental education, women empowerment etc. can have projects

17. **Evaluation and Certification of MOOCs and Vocational courses:**

The guidelines of the state government/University/SWAYAM portal/UGC shall be followed for evalution and certification of MOOCs, Vocational courses, Field-Projects/Internship/Apprenticeship/Community engagement & service/Research Project

18. **Calculation of AGPA/CGPA:**

18.1 Annual Grade Point Average (AGPA) is a measure of performance of the student in a year. It is ratio of total credit points secured by a student in various courses registered in that year and the total course credits taken during that year. i.e

$$AGPA(Y_i) = \frac{\sum(C_i \, X \, G_i)}{\sum C_i}$$

where Y_i is the i-th year, C_i is the number of credits of the i-th course in the year (Y_i) and G_i is the grade point scored by the student in the ith course

18.2 The Annual Grade Point Average (AGPA) and Cumulative Grade Point Average (CGPA) will be calculated as weighted average of credit points secured by the student, except the credits of additional courses, if any. The AGPA and CGPA shall be rounded off up to 2 decimal places and reported in the grade sheet

The calculation of of AGPA and CGPA in annual system will be done as per follows

Calculation of AGPA:

Course	Credits (C)	Grade	Grade Point (GP)	Credit Points (Cx GP)	AGPA (Total Credit Point/Total Credit)
Course 1	6	A	8	48	276/40 = 6.90
Course 2	6	C	5	30	
Course 3	6	B+	7	42	
Course 4	6	O	10	60	
Course 5	4	B	6	24	
Course 6	4	P	4	16	
Course 7	4	A+	9	36	
Course 8	4	C	5	20	
TOTAL	40		-	276	

18.3 CGPA is a measure of overall cumulative performance of a student over all the years completed. The CGPA is the ratio of total credit points secured by a student in various courses in all the years completed and the sum of the credits of all courses in all the years completed. In case of annual system CGPA will be calculated as per follows

$$CGPA = \frac{\sum[C_i \, X \, AGPA(Y_i)]}{\sum C_i}$$

where AGPA (Y_i) is the AGPA of the i-th year and C_i is the total number of credits in the i-th year

Calculation of CGPA:

Year	Credits	AGPA	Credits x AGPA	CGPA
1	40	7 50	300 00	CGPA = Total (Credits x AGPA) / Total Credits
2	40	7 58	303 20	
3	40	7 32	292 80	CGPA = 1229 60 / 160 = 7 685 = 7 69 (rounded off to second decimal point)
4	40	8 34	333 60	
Total	160		1229 60	

19. On completing all requirements for award of the undergraduate certificate/diploma/degree the CGPA will be calculated and this value will be indicated on the certificate/diploma/degree The 3 years and 4 years undergraduate degreesshould also indicate the Division obtained as per follows

Division	Criterion
First division with distinction	The candidate has earned minimum number of credits required for the award of the degree with CGPA of 8 00 or above
First division	The candidate has earned minimum number of credits required for the award of the degree with CGPA of 6 50 above but less than 8 0
Second division	The candidate has earned minimum number of credits required for the award of the degree with CGPA of 5 00 or above but less than 6 50
Pass	The candidate has earned minimum number of credits required for the award of the degree with CGPA of 4 00 or above but less than 5 00

The conversion of CGPA into percentage will be as follow to facilitate its application in other academic matters

Equivalent Percentage = CGPA x10

The percentage will be rounded off upto second decimal point

20. The student will be examined by the university as per the prevailing syllabus and scheme of examination

21. The candidate shall be awarded a certificate/diploma/degree when he/she successfully earns the minimum requisite credits for the certificate/diploma/degree

22. A Grade Card shall be issued to all the students after every academic year based on the grades earned The course details (code, title, number of credits, grade secured along with AGPAof every year and CGPA earned till that Academic Year will be displayed in the grade card

23. Grade sheets for the colleges/UTD autonomous college will be prepared based on model Annexures Y-I to Y-I for annual system

24. Credit Transfer:

24.1 The credit transfer shall be implemented as per the policy of the university framed in accordance with the guidelines issued by the UGC from time to time

24.2 The member institutions of the Academic Bank of Credit established vide University Grants Commission (Establishment and Operation of Academic Bank Of Credits in Higher Education) Regulations, 2021 shall accept and transfer the credits as per the provisions of this regulation as amended from time to time

24.3 Except for the cases of provisional promotions, the universities established by M.P University Act, 1973 shall facilitate credit transfer of students between them However, the student may be required to fulfil some eligibility criteria, drawing parity for a course, framed by the university in which the admission is sought by the student

25. If any question arises relating to the interpretation of the provisions of this ordinance, it shall be referred to the state government whose decision thereon shall be applicable

26. The guidelines, related to this programme, issued by the statutory bodies e g UGC/AICTE/BCI/NCTE/PCI/RCI issued from time to time will be adopted for implementation

27. In matters not covered under this Ordinance, general rules of the University shall be applicable, otherwise the directions of the state government shall be applicable

28. If UGC notifies any change in future in its Regulations in this regard, then the same will be incorporated in the existing Ordinance with the approval by the Kuladhipati on the recommendation of the Higher Education Department

SAMPLE COPY FOR FIRST YEAR

ANNEXURE-Y-I

University Logo

Logo in water mark

Name of the University

GRADE SHEET

Name of the Institute

Address of the Institute

Name of the Programme:

Batch.	Year: .. ..
Enrolment No :	Roll No.:
Name of the Student	Examination:
Father's/Husband's Name	Mother's Name:

Course Code	Course Title	Credits	Grade	Grade Point	Credit Points (Credits x Grade Point)
	Course 1	6	A	8	48
	Course 2	6	C	5	30
	Course 3	6	B+	7	42
	Course 4	6	O	10	60
	Course 5	4	B*	6	24
	Course 6	4	P	4	16
	Course 7	4	A+	9	36
	Course 8	4	C	5	20
TOTAL		40			276
AGPA		276/40			6.90

* Grade in Repeat Examination.

YEAR	I
TOTAL CREDITS	
OBTAINED CREDITS	
ADDITIONAL CREDITS	
AGPA	
ATTEMPT	
RESULT	

AGPA Annual Grade Point Average

CGPA: Cumulative Grade Point AverageEquivalent Percentage=CGPAx10

Date of Result:

Assistant Registrar/Controller Examination/Head, UTD

SAMPLE COPY FOR SECOND YEAR

ANNEXURE-V2

Logo in water mark

University Logo

Name of the University

GRADE SHEET

Name of the Institute:

Address of the Institute:

Name of the Programme:

Batch:	Year: . . ...
Enrolment No.:	Roll No :
Name of the Student.	Examination.
Father's/Husband's Name.	Mother's Name.

Course Code	Course Title	Credits	Grade	Grade Point	Credit Points (Credits x Grade Point)
	Course 1	6	A	8	48
	Course 2	6	C	5	30
	Course 3	6	B+	7	42
	Course 4	6	O	10	60
	Course 5	4	B*	6	24
	Course 6	4	P	4	16
	Course 7	4	A+	9	36
	Course 8	4	C	5	20
TOTAL		40	-		276
AGPA		276/40			6.90

* Grade in Repeat Examination.

RESULT YEAR WISE		
YEAR	I	II
TOTAL CREDITS		
OBTAINED CREDITS		
ADDITIONAL CREDITS		
AGPA		
ATTEMPT		
RESULT		

AGPA: Annual Grade Point Average

CGPA. Cumulative Grade Point AverageEquivalent Percentage=CGPAx10

Date of Result:

Assistant Registrar/Controllor Examination/Head, UTD

SAMPLE COPY FOR FOR THIRD YEAR

Logo in water mark

ANNEXURE-Y-3

University Logo

Name of the University

GRADE SHEET

Name of the Institute

Address of the Institute

Name of the Programme

Batch 2021-24	Year
Enrolment No	Roll No
Name of the Student	Examination
Father's/Husband's Name	Mother's Name

Course Code	Course Title	Credits	Grade	Grade Point	Credit Points (Credits x Grade Point)
	Course 1	6	A	8	48
	Course 2	6	C	5	30
	Course 3	6	B+	7	42
	Course 4	6	O	10	60
	Course 5	4	B*	6	24
	Course 6	4	P	4	16
	Course 7	4	A+	9	36
	Course 8	4	C	5	20
TOTAL		40	-		276
AGPA		276/40			6.90

* Grade in Repeat Examination

RESULT YEAR WISE			
YEAR	I	II	III
TOTAL CREDITS			
OBTAINED CREDITS			
ADDITIONALCREDITS			
AGPA			
ATTEMPT			
RESULT			

AGPA Annual Grade Point Average

FINAL RESULT PASS			
TOTAL CREDITS	CGPA	EQUIVALENT PERCENTAGE	DIVISION

CGPA Cumulative Grade Point Average Equivalent Percentage=CGPAx10

Date of Result

Assistant Registrar/Controller Examinations

SAMPLE COPY FOR FOR FOURTH YEAR

Logo in water mark

University Logo

ANNEXURE-Y-4

Name of the University

GRADE SHEET

Name of the Institute
Address of the Institute
Name of the Programme

Batch 2021-24	Year
Enrolment No	Roll No
Name of the Student	Examination
Father's/Husband's Name	Mother's Name

Course Code	Course Title	Credits	Grade	Grade Point	Credit Points (Credits x Grade Point)
	Course 1	6	A	8	48
	Course 2	6	C	5	30
	Course 3	6	B+	7	42
	Course 4	6	O	10	60
	Course 5	4	B*	6	24
	Course 6	4	P	4	16
	Course 7	4	A+	9	36
	Course 8	4	C	5	20
TOTAL		40	-		276
AGPA		276/40			6 90

* Grade in Repeat Examination

RESULT YEAR WISE				
YEAR	I	II	III	IV
TOTAL CREDITS				
ADDITIONAL CREDITS				NA
AGPA				
ATTEMPT				
RESULT				

AGPA Annual Grade Point Average

FINAL RESULT PASS			
TOTAL CREDITS	CGPA	EQUIVALENT PERCENTAGE	DIVISION

CGPA: Cumulative Grade Point Average Equivalent Percentage=CGPAx10

Date of Result:

Assistant Registrar/Controller Examinations

Vice-chancellors

(Prof. Sangeeta Shukla) (Prof. R. J. Rao) (Prof. Kapil Dev Mishra) (Prof. T. N. Thapak)

कार्यालय आयुक्त, उच्च शिक्षा,मध्यप्रदेश
सतपुड़ा भवन, भोपाल–462004

क्रमांक 1043/295/आउशि/शा.–5/2021 भोपाल, दिनांक 08/09/2021

प्रति,

1. कुलसचिव, समस्त राज्य विश्वविद्यालय, मध्यप्रदेश।
2. कुलसचिव, समस्त निजी विश्वविद्यालय, मध्यप्रदेश।
3. प्राचार्य, समस्त शासकीय/अशासकीय अनुदान प्राप्त/निजी अशासकीय महाविद्यालय, मध्यप्रदेश।

विषयः– राष्ट्रीय शिक्षा नीति 2020 के अन्तर्गत सत्र 2021–22 से स्नातक स्तर पर वार्षिक पद्धति के पाठ्यक्रम विषयक।

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उपरोक्त विषयान्तर्गत लेख है कि मध्यप्रदेश शासन, उच्च शिक्षा विभाग द्वारा सक्षम अनुमोदन उपरांत अकादमिक सत्र 2021–22 से राष्ट्रीय शिक्षा नीति 2020 के परिप्रेक्ष्य में वार्षिक पद्धति के माध्यम से कियान्वयन संबंधी निर्णय लिया गया है –

2. म.प्र. विश्वविद्यालय अधिनियम, 1973 की धारा 34–ए की उपधारा 5 के अन्तर्गत 79 विषयों के केन्द्रीय अध्ययन मंडलों का गठन किया गया। केन्द्रीय अध्ययन मंडल द्वारा स्नातक स्तर के पाठ्यक्रम निर्धारण संबंधी कार्यवाही की गई है। माननीय कुलाधिपति महोदय से प्राप्त सहमति के आधार पर 79 विषयों के वार्षिक पद्धति के पाठ्यक्रम अकादमिक सत्र 2021–22 से लागू किये जाने के लिए विभागीय वेबसाईट पर अपलोड किये जा रहे हैं।

3. विश्वविद्यालयीन क्षेत्राधिकार के महाविद्यालयों में 79 विषयों के अतिरिक्त संचालित अन्य विषयों के पाठ्यक्रम का निर्माण उच्च शिक्षा विभाग द्वारा जारी निर्देशों के अनुरूप विश्वविद्यालय स्तर पर गठित अध्ययन मंडल द्वारा किया जाये।

4. केन्द्रीय अध्ययन मण्डल द्वारा तैयार एकीकृत पाठ्यक्रम प्रदेश के समस्त विश्वविद्यालय एवं स्वशासी महाविद्यालयों में समान रूप से लागू होगा। समस्त विश्वविद्यालय एवं स्वशासी महाविद्यालय उच्च शिक्षा विभाग द्वारा जारी एकीकृत पाठ्यक्रम को यथावत स्वीकार करते हुए सम्बंधित विश्वविद्यालय एवं स्वशासी महाविद्यालय में गठित अध्ययन मण्डल के माध्यम से स्थानीय आवश्यकताओं और विशेषज्ञता के आधार पर पाठ्यक्रम में 20 प्रतिशत वृद्धि कर सकेंगे।

5. इस संदर्भ में निर्देशित किया जाता है कि समस्त शैक्षणिक संस्थान संबंधित विषय के प्राध्यापकों के माध्यम से अपने–अपने विषय के पाठ्यक्रम विभागीय वेबसाइट से डाउनलोड कर विद्यार्थियों को उपलब्ध कराना सुनिश्चित करेंगे।

कृपया निर्देशों का पालन सुनिश्चित किया जाए।

(चन्द्रशेखर वालिम्बे)
अपर आयुक्त,
उच्च शिक्षा,मध्यप्रदेश

.....निरंतर–2

पृ.क. 1044/आउशि/शा.–5 (अ)/2021 भोपाल, दिनांक 08/09/2021

प्रतिलिपिः–

1. प्रमुख सचिव, राज्यपाल सचिवालय, मध्यप्रदेश, भोपाल।
2. प्रमुख सचिव, मुख्यमंत्री कार्यालय, मध्यप्रदेश शासन, भोपाल।
3. विशेष सहायक, माननीय मंत्री, उच्च शिक्षा विभाग, मंत्रालय, भोपाल, मध्यप्रदेश।
4. उप सचिव, मुख्य सचिव कार्यालय, मध्यप्रदेश शासन, भोपाल।
5. आयुक्त, उच्च शिक्षा संचालनालय, सतपुड़ा भवन, भोपाल मध्यप्रदेश।
6. कुलपति, समस्त राज्य विश्वविद्यालय, मध्यप्रदेश।
7. कुलपति, समस्त निजी विश्वविद्यालय, मध्यप्रदेश।
8. अध्यक्ष, म.प्र. निजी विश्वविद्यालय विनियामक आयोग, मध्यप्रदेश।
8. समस्त क्षेत्रीय अतिरिक्त संचालक, उच्च शिक्षा, मध्यप्रदेश।
9. समस्त अग्रणी प्राचार्य, शासकीय महाविद्यालय, मध्यप्रदेश।
10. विशेष कर्तव्यस्थ अधिकारी, आई.टी.शाखा, उच्च शिक्षा, संचालनालय, सतपुड़ा भवन, भोपाल।

———की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु।

अपर आयुक्त,
उच्च शिक्षा,मध्यप्रदेश

PART A: Introduction				
Program: **Certificate**		Class: **B.C.A.**	Year: **I Year**	Session: **2021-22**

1.	Course Code	S1-BCAA1T	
2.	Course Title	**Computer Fundamentals, Organization and Architecture**	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Major – Paper I**	
4.	Pre-Requisite (if any)	To study this course, a student must have basic knowledge of Computers.	
5.	Course Learning Outcomes (CLO)	**After the completion of this course, a successful student will be able to :** • Understand the basic structure, operation and characteristics of digital computer. • Design simple combinational digital circuits based on given parameters. • Understand the working of arithmetic and logic unit. • Know about hierarchical memory system including cache memories and virtual memory. • Know the contributions of Indians in the field of computer architecture and related technologies.	
6.	Credit Value	**Theory – 4 Credits Practical - 2 Credits**	
7.	Total Marks	Max. Marks : **25+75**	Min. Passing Marks: **33**

PART B: Content of the Course

No. of Lectures (in hours per week): **2 Hrs. per week**

Total No. of Lectures: **60 Hrs.**

Module	Topics	No. of Lectures
I	**Fundamentals of computers:** Definition, Characteristics, capabilities and limitations. Types of Computers: Analog, Digital, Micro, Mini, Mainframe & Super Computers, Work Station, Server computers. Generations of Computers. Smart Systems: definition, characteristics and applications. Definition of Embedded system, GIS, GPS, Cloud Computing. Uses of computers in e-governance and various public domains and services.	8
II	Block diagram of computer and its functional units. Concept of hardware, software and firmware. Types of software. **Input devices** - keyboard, scanner, mouse, light pen, bar code reader, OMR, OCR, MICR, track ball, joystick, touch screen camera, mic etc. **Output devices**: monitors – classification of monitors based on technology -CRT & flat panel, LCD, LED monitors, speakers, printers – dot matrix printer, ink jet printer, laser printer, 3D Printers, Wi-Fi enabled printers, plotters and their types , LCD/LED projectors.	10

	Computer memory and its types, Storage devices: Magnetic tapes, Floppy Disks, Hard Disks, Compact Disc – CD-ROM, CD-RW, VCD, DVD, DVD-RW, usb drives, Blue Ray Disc, SD/MMC Memory cards.	
III	**Fundamentals of Digital Electronics**: Data Types, Complements, Fixed-Point Representation, Floating-Point Representation, Binary and other Codes, Error Detection Codes. **Logic Gates**, Boolean Algebra, Map Simplification, Combinational Circuits, Sequential Circuits, simple combinational circuit design problems. **Combinational Circuits**- Adder- Subtractor, Multiplexer, Demultiplexer, Decoders, Encoders **Sequential Circuits** - Flip - Flops, Registers, Counters.	10
IV	**Basic Computer Organization**: Instruction codes, Computer Registers, Computer Instructions, Timing & Control, Instruction Cycles, Memory Reference Instruction, Input - Output & Interrupts Instruction formats, Addressing modes, Instruction codes, Machine language, Assembly language. **Register Transfer and Micro operations**: Register Transfer Language, Register Transfer, Bus & Memory Transfer, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro-operations.	10
V	**Processor and Control Unit**: Hardwired vs. Micro programmed Control Unit, General Register Organization, Stack Organization, Instruction Format, Data Transfer & Manipulation, Program Control, Introductory concept of RISC, CISC, advantages and disadvantages of both. Pipelining – concept of pipelining, introduction to Pipelined data path and control – Handling Data hazards & Control hazards.	10
VI	**Memory and I/O Systems** - Peripheral Devices, I/O Interface, **Data Transfer Schemes** - Program Control, Interrupt, DMA Transfer. I/O Processor. **Memory Hierarchy**, Processor vs. Memory Speed, High-Speed Memories, Main memory & its types, Auxiliary memory, Cache Memory, Associative Memory, Interleaving, concept of Virtual Memory, Hardware support for Memory Management.	10
VII	**Indian contribution to the field** – Contributions of reputed scientists of Indian origin - like - Dr. Vinod Dham – Father of Intel Pentium Processor, Dr. Ajay Bhat – Co-Inventor of USB Technology, Dr. Vinod Khosla- co-founder of Sun Microsystems, Dr. Vijay P Bhatkar - architect of India's national initiative in supercomputing, and many others. **Parallel Computing projects of India** – PARAM, ANUPAM, FLOSOLVER, CHIPPS etc. Other relevant contributors and contributions.	2
PART C: Learning Resources		
Textbooks, Reference Books, Other Resources		
Suggested Readings		
Textbooks:		

1. M.Morris Mano, "Computer System Architecture", PHI.
2. Heuring Jordan , "Computer System Design & Architecture" (A.W.L.)
3. मध्य प्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

Reference Books:

4. William Stalling, "Computer Organization & Architecture", Pearson Education Asia.
5. V. Carl Hamacher , "Computer Organization", TMH
6. Tannenbaum, "Structured Computer Organization", PHI.
7. Er. Rajiv Chopra, "Computer Architecture", Revised 3rd Edition, S. Chand & Company Pvt. Ltd

Suggestive digital platform web links

https://www.youtube.com/watch?v=4TzMyXmzL8M
https://nptel.ac.in/courses/106/106/106106166/
https://nptel.ac.in/courses/106/106/106106134/

Suggested equivalent online courses

https://nptel.ac.in/courses/106/105/106105163/

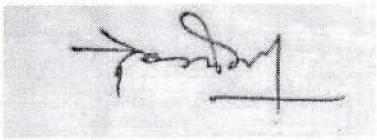
PART D: Assessment and Evaluation

Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **25 Marks** Shall be based on allotted assignments and Class Tests. The marks shall be as follows:		**External Assessment:** University Exam (UE) : **75 Marks** Time : **02.00 Hours**	
Assessment and presentation of assignment	4 Marks	Section (A): Three Very Short Questions (50 Words Each) OR Nine MCQ Questions	03 x 03 = 09 Marks OR 09 x 01 = 09 Marks
Class Test I (**Objective Questions**)	5 Marks		
Class Test II (**Descriptive Questions**)	8 Marks	Section (B) : Four Short Questions (200 Words Each)	04 x 09 = 36 Marks
Class Test III (**Based on solving circuit design problems**)	8 Marks	Section (C): Two Long Questions (500 Words Each)	02 x 15 = 30 Marks
Total	**25 Marks**	Total	**75 Marks**

Any remarks/suggestions:

PART A: Introduction				
Program: **Certificate**		Class: **B.C.A**	Year: **I Year**	Session: **2021-22**
1.	Course Code	S1-BCAA1P		
2.	Course Title	**Computer Fundamentals and Digital Lab**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Major – Paper I**		
4.	Pre-Requisite (if any)	Open for All		
5.	Course Learning Outcomes(CLO)	**After the completion of this course, a successful student will be able to do the following:** • Familiarity with parts of the computer and peripheral devices used with the computer. • Realization of the basic logic and universal gates. • Verify the behavior of logic gates using truth tables. • Implement Binary-to -Gray, Gray-to -Binary code conversions. • Design half and full adder circuit using basic gates. • Design and construct flip flops and verify the excitation tables.		
6.	Credit Value	**Practical - 2 Credits**		
7.	Total Marks	Max.Marks: **25+75**	Min. Passing Marks: **33**	

PART B: Content of the Course		
No. of Lab. Practicals (in hours per week): **1 Hrs. per week**		
Total No. of Labs: **30 Hrs.**		
	Suggestive list of Practicals	**No. of Labs.**
	I. Computer Fundamentals a) Identify various parts of the computer by physical examination. b) Identify various parts inside the CPU like motherboard, SMPS, ports, buses, IC chips, Processor, HDD, RAM etc. c) Identify various I/O devices available in the lab physically. II. Digital Electronics a) Verification and interpretation of truth table for AND, OR, NOT gates b) Verification and interpretation of truth table for NAND, NOR gates c) Verification and interpretation of truth table for Ex-OR, Ex-NOR gates d) Study of half adder using XOR and NAND gates and verification of its operation e) Study of full adder using XOR and NAND gates and verification of its operation	30 Hrs.



	f) Study of half subtractor and verification of its operation g) Study of full subtractor and verification of its operation h) Realization of logic functions with the help of NAND -Universal Gates i) Realization of logic functions with the help of NOR -Universal Gates j) Verify the truth table of RSflip-flops using NAND and NOR gates k) Verify the truth table of JKflip-flops using NAND and NOR gates l) Verify the truth table of T and D flip-flops using NAND and NOR gates m) Implementation of 4x1 multiplexer using logic gates n) Implementation of 1x4 demultiplexer using logic gates o) Verify Gray to Binary conversion using NAND gates only p) Verify Gray to Binary conversion using NAND gates only	

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

- M.Morris Mano, "Computer System Architecture", PHI.
- Heuring Jordan , "Computer System Design & Architecture" (A.W.L.)
- मध्यप्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

Reference Books:

- William Stalling, "Computer Organization & Architecture", Pearson Education Asia.
- V. Carl Hamacher , "Computer Organization", TMH
- Tannenbaum, "Structured Computer Organization", PHI.

Suggestive digital platform web links

https://de-iitr.vlabs.ac.in/

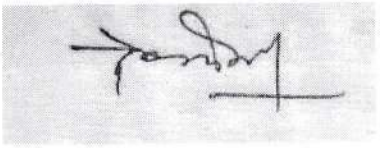
Suggested equivalent online courses

https://nptel.ac.in/courses/106/105/106105163/

PART D: Assessment and Evaluation

Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **25 Marks**		**External Assessment**: University Exam (UE): **75 Marks** Time : **02.00 Hours**	
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Hands-on Lab Practice	5 Marks	Practical record file	10 Marks
Viva	5 Marks	Viva voce practical	15 Marks
Lab Test from practical list	7 Marks	Table works/ Exercise Assigned (02) in practical exam	40 Marks

Assignments (Charts/ Model)/ Technology Dissemination/ Excursion/ Lab visit/ Industrial Training	8 Marks	Reports of excursion/ Lab visits/ Industrial training/ Survey/ Collection/ Models	10 Marks
Total ***Excursion/ Lab visits/ Industrial*** ***Training is compulsory***	**25 Marks**	**Total**	**75 Marks**



PART A: Introduction			
Program: **Certificate**	Class: **B.C.A.**	Year: **I Year**	Session: **2021-22**

1.	Course Code	S1 - BCAA2T
2.	Course Title	**Programming Methodology & Data Structures**
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Major – Paper II**
4.	Pre-Requisite (if any)	To study this course, a student must have basic knowledge of Computers.
5.	Course Learning Outcomes(CLO)	**After the completion of this course, a successful student will be able to do the following:** • Develop simple algorithms and flow charts to solve a problem with programming using top down design principles. • Writing efficient and well-structured computer algorithms/programs. • Learn to formulate iterative solutions and array processing algorithms for problems. • Use recursive techniques, pointers and searching methods in programming. • Will be familiar with fundamental data structures, their implementation; become accustomed to the description of algorithms in both functional and procedural styles. • Have knowledge of complexity of basic operations like insert, delete, search on these data structures. • Possess ability to choose a data structure to suitably model any data used in computer applications. • Assess efficiency tradeoffs among different data structure implementations. • Implement and know the applications of algorithms for searching and sorting. • Know the contributions of Indians in the field of programming and data structures.
6.	Credit Value	**Theory – 4 Credits Practical – 2 Credits**
7.	Total Marks	Max. Marks : **25+75** | Min. Passing Marks: **33**

PART B: Content of the Course
No. of Lectures (in hours per week): **2 Hrs. per week**
Total No. of Lectures: **60 Hrs.**

Module	Topics	No. of Lectures
I	**Introduction to Programming** - Program Concept, Characteristics of Programming, Stages in Program Development, Algorithms, Notations, Design, Flowcharts, Types of Programming Methodologies.	8

	Basics of C++: A Brief History of C++, Application of C++, Compiling & Linking, Tokens, Keywords, Identifiers & Constants , Basic Data Types, User-Defined Data Types, Symbolic Constant, Type Compatibility, Reference Variables, Operator in C++, Scope Resolution Operator, Member Dereferencing Operators, Memory Management Operators, Manipulators, Type Cast Operator. **Functions In C++:** The Main Function, Function Prototyping, Call by Reference Call by Address, Call by Value, Return by Reference, Inline Function, Default Arguments, Constant Arguments, Function Overloading, Function with Array.	
II	**Classes & Objects:** A Sample C++ Program with class, Defining Member Functions, Making an Outside Function Inline, Nesting of Member Functions, Private Member Functions, Arrays within a Class, Memory Allocation for Objects, Static Data Members, Static Member, Functions, Array of Objects, Object as Function Arguments, Friend Functions, Virtual functions, Returning Objects, Constant member functions, Pointer to Members, Local Classes. **Constructor & Destructor:** Constructor, Parameterized Constructor, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructor and Destructor.	10
III	**Inheritance:** Defining Derived Classes, Single Inheritance, Making a Private Member Inheritable, Multilevel Inheritance, Hierarchical Inheritance, Multiple Inheritance, Hybrid Inheritance, Virtual Base Classes, Abstract Classes, Constructor in Derived Classes, Nesting of Classes. Operator Overloading & Type Conversion, Polymorphism, Pointers, Pointers with Arrays C++, Streams, C++ Stream Classes, Unformatted I/O Operation, Formatted I/O Operation, Managing Output with Manipulators, Exception Handling.	8
IV	**Data Structure:** Basic concepts, Linear and Non-Linear data structures **Algorithm Specification:** Introduction, Recursive algorithms, Data Abstraction, Performance analysis. **Arrays:** Representation of single, two-dimensional arrays, triangular arrays, sparse matrices-array and linked representations. **Stacks:** Operations, Array and Linked Implementations, Applications-Infix to Postfix Conversion, Infix to Prefix Conversion, Postfix Expression Evaluation, Recursion Implementation. **Queues:** Definition, Operations, Array and Linked Implementations. Circular Queue-Insertion and Deletion Operations, Dequeue (Double Ended Queue), Priority Queue- Implementation.	12
V	**Linked Lists:** Singly Linked Lists, Operations, Concatenating, circularly linked lists-Operations for Circularly linked lists, Doubly Linked Lists- Operations, Doubly Circular Linked List, Header Linked List **Trees:** Representation of Trees, Binary tree, Properties of Binary Trees, Binary Tree Representations- Array and Linked Representations,	10

	Binary Tree Traversals, Threaded Binary Trees. **Heap:** Definition, Insertion, Deletion.	
VI	**Graphs:** Graph ADT, Graph Representations, Graph Traversals, Searching. **Hashing:** Introduction, Hash tables, Hash functions, Overflow Handling. **Sorting:** Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort, Comparison of Sorting Methods, **Search Trees:** Binary Search Trees, AVL Trees- Definition and Examples.	10
VII	**Indian Contribution to the field:** Innovations in India, origin of Julia Programming Language, Indian Engineers who designed new programming languages, open source languages, Dr. Sartaj Sahni – computer scientist - pioneer of data structures, Other relevant contributors and contributions.	2

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

- J. R. Hanly and E. B. Koffman, "Problem Solving and Program Design in C", Pearson, 2015
- E. Balguruswamy, "C++ ", TMH Publication ISBN O-07-462038-X
- Herbert Shildt, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7
- मध्य प्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

Reference Books:

- R. Lafore, 'Object Oriented Programming C++"
- N. Dale and C. Weems, "Programming and problem solving with C++: brief edition", Jones & Bartlett Learning.
- Adam Drozdek, "Data Structures and algorithm in C++", Third Edition, Cengage Learning.
- Sartaj Sahani, "Data Structures, Algorithms and Applications with C++", McGraw Hill.
- Robert L. Kruse, "Data Structures and Program Design in C++", Pearson.
- D.S. Malik, "Data Structure using C++", Second edition, Cengage Learning.
- M. A. Weiss, "Data structures and Algorithm Analysis in C", 2nd edition, Pearson.
- Lipschutz, "Schaum's outline series Data structures", Tata McGraw-Hill

Suggestive digital platform web links

https://www.youtube.com/watch?v=BClS40yzssA
https://www.youtube.com/watch?v=vLnPwxZdW4Y&vl=en
https://www.youtube.com/watch?v=Umm1ZQ5ltZw

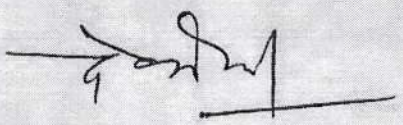
Suggested equivalent online courses

S.No.	Online Course	Duration	Platform
1	Programming in C++ https://nptel.ac.in/courses/106/105/106105151/	8 weeks	NPTEL
2	Beginning C++ Programming - From Beginner to Beyond https://www.udemy.com/course/beginning-c-plus-plus-programming/	Self paced	Udemy

PART D: Assessment and Evaluation

Internal Assessment : Continuous	**External Assessment**: University Exam (UE) : **75**

Comprehensive Evaluation (CCE) : **25 Marks** Shall be based on allotted assignments and Class Tests. The marks shall be as follows:		**Marks** Time : **02.00 Hours**	
Assessment and presentation of assignment	8 Marks	Section (A) : Three Very Short Questions (50 Words Each) OR Nine MCQ Questions	03 x 03 = 09 Marks
Class Test I (**Objective Questions**)	4 Marks		
Class Test II **(Descriptive Questions)**	5 Marks	Section (B) : Four Short Questions (200 Words Each)	04 x 09 = 36 Marks
Class Test III (**Based on solving programming problems**)	8 Marks	Section (C): Two Long Questions (500 Words Each)	02 x 15 = 30 Marks
Total	**25 Marks**	Total	**75 Marks**
Any remarks/suggestions: **Focus of the course/teaching should be on developing ability of the student in analyzing a problem, building the logic and efficient code for the problem.**			



PART A: Introduction				
Program: **Certificate**		Class: **B.C.A.**	Year: **I Year**	Session: **2021-22**
1.	Course Code	S1-BCAA2P		
2.	Course Title	**Programming Methodology & Data Structures Lab**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Major – Paper II**		
4.	Pre-Requisite (if any)	To study this course, a student must have basic knowledge of Computers.		
5.	Course Learning Outcomes(CLO)	**After the completion of this course, a successful student will be able to do the following:** 1. Develop simple algorithms and flow charts to solve a problem with programming using top down design principles. 2. Writing efficient and well-structured computer algorithms/programs. 3. Learn to formulate iterative solutions and array processing algorithms for problems. 4. Use recursive techniques, pointers and searching methods in programming. 5. Possess ability to choose a data structure to suitably model any data used in computer applications. 6. Implement and know the applications of algorithms for searching and sorting etc.		
6.	Credit Value	**Practical – 2 Credits**		
7.	Total Marks	Max. Marks : **25+75**	Min. Passing Marks: **33**	

PART B: Content of the Course		
No. of Lab Practicals (in hours per week): **1 hour per week**		
Total No. of Lab.: **30 Hrs.**		
	Suggestive list of Practicals	**No. of Labs.**
	Given the problem statement, students are required to formulate problem, develop flowchart/algorithm, write code in C++, execute and test it. Students should be given assignments on following : 1. Write a program to swap the contents of two variables. 2. Write a program for finding the roots of a Quadratic Equation. 3. Write a program to find area of a circle, rectangle, square using switch case. 4. Write a program to print table of any number. 5. Write a program to print Fibonacci series. 6. Write a program to find factorial of a given number using recursion. 7. Write a program to convert decimal (integer) number into	30

	equivalent binary number. 8. Write a program to check given string is palindrome or not. 9. Write a program to print digits of entered number in reverse order. 10. Write a program to print sum of two matrices. 11. Write a program to print multiplication of two matrices. 12. Write a program to generate even/odd series from 1 to 100. 13. Write a program whether a given number is prime or not. 14. Write a program for call by value and call by reference. 15. Write a program to create a pyramid structure 1 12 123 1234 16. Write a program to check entered number is Armstrong or not. 17. Write a program to input N numbers and find their average. 18. Write a program to find the area and volume of a rectangular box using constructor. 19. Write a program to design a class time with hours, minutes and seconds as data members. Use a data function to perform the addition of two time objects in hours, minutes and seconds. 20. Write a program to implement single inheritance. 21. Write a program to find largest element from an array. 22. Write a program to implement push and pop operations on a stack using array. 23. Write a program to perform insert and delete operations on a queue using array. 24. Write a program for Linear search. 25. Write a program for Binary search. 26. Write a program for Bubble sort. 27. Write a program for Selection sort. 28. Write a program for Quick sort. 29. Write a program for Insertion sort. 30. Write a program to implement linked list.	

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

- J. R. Hanly and E. B. Koffman, "Problem Solving and Program Design in C", Pearson, 2015
- E. Balguruswamy, "C++ ", TMH Publication ISBN O-07-462038-X
- Herbert Shildt, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7
- मध्य प्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

Reference Books:

- R. Lafore, 'Object Oriented Programming C++"
- N. Dale and C. Weems, "Programming and problem solving with C++: brief edition", Jones & Bartlett

Learning.
- Adam Drozdek, "Data Structures and algorithm in C++", Third Edition, Cengage Learning.
- Sartaj Sahani, "Data Structures, Algorithms and Applications with C++", McGraw Hill.
- Robert L. Kruse, "Data Structures and Program Design in C++", Pearson.
- D.S. Malik, "Data Structure using C++", Second edition, Cengage Learning.
- M. A. Weiss, "Data structures and Algorithm Analysis in C", 2nd edition, Pearson.
- Lipschutz, "Schaum's outline series Data structures", Tata McGraw-Hill

Suggestive digital platform web links

https://www.youtube.com/watch?v=BClS40yzssA
https://www.youtube.com/watch?v=vLnPwxZdW4Y&vl=en
https://www.youtube.com/watch?v=Umm1ZQ5ltZw

Suggested equivalent online courses

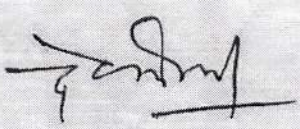
S.No.	Online Course	Duration	Platform
1	Programming in C++ https://nptel.ac.in/courses/106/105/106105151/	8 weeks	NPTEL
2	Beginning C++ Programming - From Beginner to Beyond https://www.udemy.com/course/beginning-c-plus-plus-programming/	Self paced	Udemy

PART D: Assessment and Evaluation

Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **25 Marks**

External Assessment: University Exam (UE) : **75 Marks**
Time : **02.00 Hours**

Internal Assessment	**Marks**	**External Assessment**	**Marks**
Hands-on Lab Practice	5 Marks	Practical record file	10 Marks
Viva	5 Marks	Viva voce practical	15 Marks
Lab Test from practical list	7 Marks	Table works/ Exercise Assigned (02) in practical exam	40 Marks
Assignments (Charts/ Model)/ Technology Dissemination/ Excursion/ Lab visit/ Industrial Training	8 Marks	Reports of excursion/ Lab visits/ Industrial training/ Survey/ Collection/ Models	10 Marks
Total *Excursion/ Lab visits/ Industrial Training is compulsory*	**25 Marks**	**Total**	**75 Marks**



PART A: Introduction			
Program: **Certificate**	Class: **B.C.A.**	Year: **I Year**	Session: **2021-22**

1.	Course Code	S1 - BCAB2T	
2.	Course Title	**Operating System**	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Minor**	
4.	Pre-Requisite (if any)	Open for all	
5.	Course Learning Outcomes (CLO)	• **After the completion of this course, a student shall be able to do the following:** • Describe the importance of computer system resources and the role of operating system in their management policies and algorithms. • Specify objectives of modern operating systems and describe how operating systems have evolved over time. • Understand various process management concepts and can compare various scheduling techniques, synchronization, and deadlocks. • Describe the concepts of memory management techniques. • Identify the best suited process management technique for any process. • Describe various file operations, file allocation methods and disk space management. • To understand and identify potential threats to operating systems and the security features to guard against them. • Learn to operate the Linux system,	
6.	Credit Value	**Theory - 4 Credits Practical – 2 Credits**	
7.	Total Marks	Max. Marks : **25+75**	Min. Passing Marks: **33**

PART B: Content of the Course

No. of Lectures (in hours per week): **2 Hours per week**

Total No. of Lectures: **60 Hrs.**

Module	Topics	No. of Lectures
I	**Introduction to Operating System**: What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems– Batch Systems, Multiprogramming Systems, Multiprocessing Systems, Time Sharing Systems, Distributed OS, Real time systems. Operating System for Personal Computers, Workstations and Hand-held Devices. Applications of various operating system in real world. Some prevalent operating systems – Windows, UNIX/Linux, Android, MacOS, Blackberry OS, Symbian, Bada etc.	6
II	**Process Management**: Process Concepts, Process states & Process Control Block. **Process Scheduling**: Scheduling Criteria, Scheduling Algorithms (Preemptive & Non- Preemptive) – FCFS, SJF, SRTN, RR, Priority,	14

	Multiple-Processor, Real-Time, Multilevel Queue and Multilevel Feedback Queue Scheduling. **Deadlock** - Definition, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock. **Deadlock Handling Approaches**: Prevention, Avoidance, Detection and Recovery.	
III	**Memory Management**: Introduction, Address Binding, Logical versus Physical Address Space, Swapping, Contiguous & Non-Contiguous Allocation, Fragmentation (Internal & External), Compaction, Paging, Segmentation, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement Algorithms. **File Management**: Concept of File System(File Attributes, Operations, Types), Functions of File System, Types of File System, Access Methods (Sequential, Direct & other methods), Directory Structure (Single-Level, Two-Level, Tree-Structured, Acyclic-Graph, General Graph), Allocation Methods (Contiguous, Linked, Indexed)	14
IV	**Disk Management**: Structure, Disk Scheduling Algorithms (FCFS, SSTF, SCAN, C-SCAN, LOOK), Swap Space Management, Disk Reliability, Recovery. **Security**: Security Threats, Security policy mechanism, Protection, Trusted Systems, Authentication and Internal Access Authorization, Windows Security.	12
V	**LINUX**: Introduction, History and features of Linux, advantages, hardware requirements for installation, Linux architecture, file system of Linux - boot block, super block, inode table, data blocks. Linux standard directories, Linux kernel, Partitioning the hard drive for Linux, installing the Linux system, system - startup and shut-down process, init and run levels. Process, Swap, Partition, fdisk, checking disk free spaces. Difference between CLI OS & GUI OS, Windows v/s Linux, Importance of Linux Kernel, Files and Directories. Concept of Open Source Software.	12
VI	**Indian contribution to the field** – the BOSS operating system, open source softwares, growth of LINUX, Aryabhatt Linux, contributions of innovators – RajenSheth, Sunder Pichai etc.	2

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

- A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition, John Wiley Publications.
- A.S. Tanenbaum, Modern Operating Systems, 3rd Edition, Pearson Education.
- Operating System by Peterson
- Linux by Sumitabh Das
- मध्यप्रदेशहिंदीग्रंथअकादमीसेप्रकाशितविषयसेसंबंधितपुस्तकें।

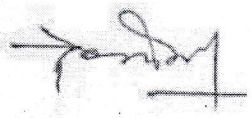
Reference Books:

- G. Nutt, Operating Systems: A Modern Perspective, 2nd Edition Pearson Education.
- W. Stallings, Operating Systems, Internals & Design Principles, 8th Edition, Pearson Education.
- M. Milenkovic, Operating Systems- Concepts and design, Tata McGraw Hill.
- Operating System design and Concepts by Milan Milenkovic.

Suggestive digital platform web links
https://web.iitd.ac.in/~minati/MTL458.html https://www.cse.iitb.ac.in/~mythili/os/ https://www.youtube.com/watch?v=aCJ3YgoolHQ
Suggested equivalent online courses
https://nptel.ac.in/courses/106/102/106102132/

PART D: Assessment and Evaluation

Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **25 Marks** Shall be based on allotted assignments and Class Tests. The marks shall be as follows:		**External Assessment**: University Exam (UE) : **75 Marks** Time : **02.00 Hours**	
Assessment and presentation of assignment	4 Marks	Section (A) : Three Very Short Questions (50 Words Each) OR Nine MCQ Questions	03 x 03 = 09 Marks **OR** 09 x 01 = **9 Marks**
Class Test I (**Objective Questions**)	5 Marks		
Class Test II (**Descriptive Questions**)	8 Marks	Section (B) : Four Short Questions (200 Words Each)	04 x 09 = 36 Marks
Class Test III (**Based on OS commands**)	8 Marks	Section (C): Two Long Questions (500 Words Each)	02 x 15 = 30 Marks
Total	**25 Marks**	Total	**75 Marks**
Any remarks/suggestions:			



PART A: Introduction			
Program: **Certificate**	Class: **B.C.A.**	Year: **I Year**	Session: **2021-22**

1.	Course Code	S1- BCAB2P	
2.	Course Title	**Operating System Lab**	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Minor**	
4.	Pre-Requisite (if any)	Open for All	
5.	Course Learning Outcomes (CLO)	**After the completion of this course, a student shall be able to:** • Operate the Linux system. • Do administration • Use Vi Editor	
6.	Credit Value	**Practical – 2 Credits**	
7.	Total Marks	Max. Marks : **25+75**	Min. Passing Marks: **33**

PART B: Content of the Course

No. of Lab. Practicals (in hours per week): **1Hr. per week**

Total No. of Lab.: **30 Hrs.**

	Suggestive List of Practicals	No. of Labs.
	Linux: **a) Linux Directory Commands:** pwd, mkdir, rm -rf, ls, cd,cd / , cd ~ **b) Linux File Commands:** touch, cat, cat >, cat >>, rm , cp, mv, rename **c) Linux Permission Commands:**su, id, useradd, passwd, groupadd, chmod, groupdel, chown, chgrp **d) Linux File Content & Filter Commands:** head, tail, tac, more, less, grep, cat, cut, grep, comm, sed, tee, tr, uniq, wc, od, sort, diff. **e) Linux Utility Commands:** find, bc, locate, date, cal, sleep, time, df, mount, exit, clear, gzip, gunzip. **f) Linux Networking Commands:** ip, ssh, mail, ping, host **g) Edit Crontab file:** to wall message on system on particular time automatically. h) **Vi editor:** Create file, edit, save and quit. Highligting the searched term within a file. cut, yank, undo.	30

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

- Linux by Sumitabh Das
- Linux Bible
- मध्यप्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

Suggestive digital platform web links

https://web.iitd.ac.in/~minati/MTL458.html
https://www.cse.iitb.ac.in/~mythili/os/
https://www.youtube.com/watch?v=aCJ3YgoolHQ

Suggested equivalent online courses			
https://nptel.ac.in/courses/106/102/106102132/ https://www.youtube.com/watch?v=OHCMfsNpqCc			
PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **25 Marks**		**External Assessment**: University Exam (UE) : **75 Marks** Time : **02.00 Hours**	
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Hands-on Lab Practice	5 Marks	Practical record file	10 Marks
Viva	5 Marks	Viva voce practical	15 Marks
Lab Test from practical list	7 Marks	Table works/ Exercise Assigned (02) in practical exam	40 Marks
Assignments (Charts/ Model)/ Technology Dissemination/ Excursion/ Lab visit/ Industrial Training	8 Marks	Reports of excursion/ Lab visits/ Industrial training/ Survey/ Collection/ Models	10 Marks
Total ***Excursion/ Lab visits/ Industrial*** ***Training is compulsory***	**25 Marks**	**Total**	**75 Marks**