SYLLABUS STATING OBJECTIVES/ EXAMINATION SCHEME STATING THEORY/PRACTICALS MARKS IN SCIENCE PROGRAMMES

AWADHESH PRATAP SINGH UNIVERSITY

REWA(M.P.)

(ACCREDIATED GRADE "B" BY NAAC)

FACULTY OF SCIENCES

Syllabus for

M.Sc. (PHYSICS)

Choice Based Credit System

With Effect From 2020-21

Examination Scheme

Semester-I

Course code & Name of Paper	Course Type	Theory paper	Internal Assessment	Maximum Marks	Credits
C-1;Classical Mechanics	Core	60	40	100	04
C-2;Quantum Mechanics-I	Core	60	40	100	04
C-3;Electronic Devices	Core	60	40	100	04
*GE-1; Mathematical Physics	Generic Elective	60	40	100	04
CV-1;Comprehensive Viva Voce				100	04
PL-1;Practicals-General				50	02
PL-2;Practicals-Electronics				50	02
Semester Total				600	24

Semester-II

Course code & Name of Paper	Course Type	Theory paper	Internal Assessment	Maximum Marks	Credits
C-4; Quantum Mechanics-II	Core	60	40	100	04
C-5;Statistical Mechanics	Core	60	40	100	04
C-6; Electrodynamics & Plasma Physics	Core	60	40	100	04
*GE-2;Atomic & Molecular Physics	Generic Elective	60	40	100	04
CV-2 ; Comprehensive Viva Voce				100	04
PL-3;Practicals-General				50	02
PL-4;Practicals-Electronics				50	02
Semester Total				600	24

Semester-III

Course code & Name of Paper	Course Type	Theory paper	Internal Assessment	Maximum Marks	Credits
C-7; Nuclear & Particle Physics	Core	60	40	100	04
C-8;Condensed Matter Physics	Core	60	40	100	04
^DCE-1; Digital Electronics or ^DCE-2;Energy Physics or ^DCE-3;Space Technology Or ^DCE-4;Remote Sensing & Applications	Discipline Centric Elective	60	40	100	04
*GE-3; Informatics	Generic Elective	60	40	100	04
CV-3; Comprehensive Viva Voce				100	04
PL-5;Practicals-General				50	02
PL-6;Practicals-Electronics				50	02
Semester Total				600	24

Semester-IV

Course code & Name of Paper	Course Type	Theory paper	Internal Assessment	Maximum Marks	Credits
C-9; Laser Physics	Core	60	40	100	04
C-10;Modern Experimental Techniques	Core	60	40	100	04
^DCE-5; Advance Electronics or ^DCE-6;Astrophysics or ^DCE-7;Environmental Physics Or ^DCE-8;Physics of Nanomaterials	Discipline Centric Elective	60	40	100	04
*GE-4; Atmospheric Science	Generic Elective	60	40	100	04
CV-4; Comprehensive Viva Voce				100	04
PL-7;Practicals-General				50	02
PL-8;Practicals-Electronics				50	02
Semester Total				600	24

*Students may choose this course as Generic Elective or may choose a Generic Elective offered by other UTD departments or may choose a course offered by MOOCs through SWAYAM.

^Students can offer atleast one Discipline Centric Elective Course with internal choice in each course.

M.Sc. Programme

Program Objectives

PO1: Development of Analytical, logical and problem solving skills making use of different Mathematical/Computational tools and Observational skills.

PO2: Provide extensive and intensive knowledge of front line new Technologies/Sciences like Nuclear Technology, Space Technology, Communication Technology, LASER Technology, Nano Technology and Remote sensing Technology alongwith their applications.

PO3: Acquire experimental skills and Observational skills through Laboratory practice.

PO4: Ability to build up Electronic circuits and create Programming skills through laboratory practice.

Po5: Achieving knowledge of certain inter disciplinary subjects correlated to Physics with other associated disciplines.

Program Specific Outcomes

PSO1: Provide knowledge of fundamental Physics to aspiring students.

PSO2: Enhance employability/Entrepreneurship/skill developments

PSO3: To develop skill/ability to perform laboratory experiments/Project works leading to perform research and Entrepreneurial activities.

PSO4: Develop skills of presentation in form of posters and oral presentations in seminars and symposia.

AWADHESH PRATAP SINGH UNIVERSITY

REWA (M.P.) 486003

CBCS

CURRICULAM & SYLLABUS

MASTER OF COMPUTER SCIENCE (M.Sc.)

(UGC Approved)

Course Code: 08

www.apsurewa.ac.in

Approved by Board of studies dated 21-09-2020

DEPARTMENT OF COMPUTER SCIENCE A.P.S. UNIVERSITY, REWA (M.P.)
SYLLABUS FOR M.SC. COMPUTER SCIENCE
(w.e.f. SESSION 2020-2021)

Semester I

Paper Code	Subject Code	Subject Name	Course Type	Credits	Theory Marks	Internal Marks	Practical Marks	Total Marks
1081	MSCS-101	Discrete Mathematics	CC	4	60	40	0	100
1082	MSCS-102	Computer System Architecture	CC	4	60	40	0	100
10831 10832	MSCS-103	**Elective I:: (Any one of the following considering departmental constraints)** a) Data Structure Using C b) Web Technology	DCE	4	60	40	0	100
10841 10842	MSCS-104	**Elective II:: (Any one of the following considering departmental constraints)** a) Numerical Methods b) E-Commerce and E-Governance	DCE	4	60	40	0	100
1085	MSCS-105	DBMS *	GE	4	60	40	0	100
1086	MSCS-106	S/W Lab-I MSCS 102 & 103	LAB	2	0	40	60	100
1087	MSCS-107	S/W Lab-II MSCS104 & 105	LAB	2		40	60	100
1088	MSCS-108	Comprehensive Viva	VIVA	4				100
		Semester Total Marks and Credits		**28**				**800**

Semester II

Paper Code	Subject Code	Subject Name	Course Type	Credits	Theory Marks	Internal Marks	Practical Marks	Total Marks
2081	MSCS-201	System Software	CC	4	60	40	0	100
2082	MSCS-202	Software Engineering	CC	4	60	40	0	100
20831 20832	MSCS-203	**Elective III:: (Any one of the following considering departmental constraints)** a) Object Oriented Programming b) Programming in Python	DCE	4	60	40	0	100
20841 20842	MSCS-204	**Elective VI:: (Any one of the following considering departmental constraints)** a) Computer Network b) Big Data Analysis	DCE	4	60	40	0	100
2085	MSCS-205	Advanced Programming Language *	GE	4	60	40	0	100
2086	MSCS-206	S/W Lab-I MSCS 203	LAB	2		60	40	100
2087	MSCS-207	S/W Lab-I MSCS 205	LAB	2		60	40	100
2088	MSCS-208	Comprehensive Viva	VIVA	4				100
		Semester Total Credits and Marks		**28**				**800**

CC: Core Course GE: Generic Elective DCE: Discipline Centric Elective

* Student may choose this course as a Generic Elective or may choose a Generic Elective Course Offered in other UTDs at the same level or may choose a course offered by MOOCs through SWAYAM

Instructions:
1. For passing the subject examination minimum 40% marks must be separately scored in Theory Paper, Practical Exams and Internal Evaluation for the subject.
2. Please refer concerned regulation for details

Approved by Board of studies dated 21-09-2020

Semester III

Paper Code	Subject Code	Subject Name	Course Type	Credits	Theory Marks	Internal Marks	Practical Marks	Total Marks
3081	MSCS-301	Operating System	CC	4	60	40	0	100
3082	MSCS-302	Computer Graphics & Multimedia	CC	4	60	40	0	100
30831 30832	MSCS-303	**Elective V:: (Any one of the following considering departmental constraints)** a) Theory of Computation b) AI & Machine Learning	DCE	4	60	40	0	100
30841 30842	MSCS-304	**Elective VI:: (Any one of the following considering departmental constraints)** a) Advanced Computer Architecture b) Information & Network Security	DCE	4	60	40	0	100
3085	MSCS-305	Java Programming*	GE	4	60	40	0	100
3086	MSCS-306	S/W Lab-I MSCS 302	LAB	2		60	40	100
3087	MSCS-307	S/W Lab-I MSCS 305	LAB	2		60	40	100
3088	MSCS-308	Comprehensive Viva	VIVA	4				100
		Semester Total Credits and Marks		**28**				**800**

Semester IV

Paper Code	Subject Code	Subject Name	Course Type	Credits	Theory Marks	Internal Marks	Practical Marks	Total Marks
4081	MSCS401	Major Project/ Dissertation External Evaluation	CC	12				300
4082	MSCS402	Major Project/ Dissertation Internal Evaluation	CC	8				200
4083	MSCS403	Comprehensive Viva	Viva	4				100
		Total		**24**				**600**

CC: Core Course GE: Generic Elective DCE: Discipline Centric Elective

* Student may choose this course as a Generic Elective or may choose a Generic Elective Course Offered in other UTDs at the same level or may choose a course offered by MOOCs through SWAYAM

Instructions:

1. For passing the subject examination minimum 40% marks must be separately scored in Theory Paper, Practical Exams and Internal Evaluation for the subject.
2. For passing the semester, minimum aggregate marks must be 45% in the semester.

Approved by Board of studies dated 21-09-2020

AWADHESH PRATAP SINGH UNIVERSITY
REWA (M.P.) 486003

CBCS
CURRICULAM & SYLLABUS

POST GRADUCATE DIPLOMA IN COMPUTER SCIENCE & APPLICATION (PGDCA)

(ONE YEAR TWO SEMESTERS)

(UGC Approved)

Course Code: 05

www.apsurewa.ac.in

Approved by Board of studies dated 21-09-2020

A.P.S. UNIVERSITY, REWA (MP)
POST GRADUCATE DIPLOMA IN COMPUTER SCIENCE & APPLICATION (PGDCA)
SCHEME OF EXAMINATION (w.e.f. session 2020-21)

PGDCA Semester -I

Paper Code	Course Code	Paper Name	Course Type	Credits	Theory Paper	Internal Assessment	Maximum Marks
1051	PGDCA -101	Computer Fundamentals	CC	04	60	40	100
10521 10522	PGDCA -102	**Elective I:: (Any one of the following considering departmental constraints)** (A) Programming in C (B) Multimedia Application	DCE	04	60	40	100
10531 10532	PGDCA -103	**Elective II:: (Any one of the following considering departmental constraints)** (A) Analysis and Design of Information System (B) E-Commerce and E-Governance	DCE	04	60	40	100
1054	PGDCA -104	Office Automation S/W Tools*	GE	04	60	40	100
1055	PGDCA-105	Software Lab I (Problem based on Paper 102)	Lab	02	60	40	100
1056	PGDCA-106	Software Lab II (Problem based on Paper 101 & 104)	Lab	02	60	40	100
1057	PGDCA-107	Comprehensive Viva/ Project	Viva	04			100
		Semester Total		**24**			**700**

PGDCA Semester – II

Paper Code	Course Code	Paper Name	Course Type	Credits	Theory Paper	Internal Assessment	Maximum Marks
20511 20512	PGDCA-201	**Elective III:: (Any one of the following considering departmental constraints)** (A) JAVA Programming (B) Web Technology	DEC	04	60	40	100
20521 20522	PGDCA-202	**Elective IV:: (Any one of the following considering departmental constraints)** (A) Computer Networks (B) Big Data Analysis	DCE	04	60	40	100
2053	PGDCA-203	DBMS*	GE	04	60	40	100
2054	PGDCA-204	Software Lab I (Problem based on 201)	Lab	02	60	40	100
2055	PGDCA-205	Software Lab II (Problem based on 203)	Lab	02	60	40	100
2056	PGDCA-206	Application Project	Project	04			100
2057	PGDCA-207	Comprehensive Viva	Viva	04			100
		Semester Total		**24**			**700**

CC: Core Course GE: Generic Elective DCE: Discipline Centric Elective

* Student may choose this course as a Generic Elective or may choose a Generic Elective Course Offered in other UTDs at the same level or may choose a course offered by MOOCs through SWAYAM

Approved by Board of studies dated 21-09-2020

OBJECTIVES:

Post Graduate Diploma in Computer Applications (PGDCA) is designed for graduate students who are seeking professional knowledge in computer applications and are keen to equip the students with requisite knowledge, skills and right attitude necessary for becoming efficient Computer / IT Professionals. This course is useful for students who want to learn computer applications in different fields like banking, insurance, government sectors and accounting. This programme covers a blend of computer subjects like programming languages, data base management, systems analysis, Operating system, PC packages and computer software development in specific applications.

The main objectives of the programme are:

- To gain practical, hands-on experience in computer applications and tools playing a significant role in business, banking and government sectors.
- Tomakesustainedeffortsforholisticdevelopmentofthestudentsandempower them to analyze, develop, configure IT solutions keeping in view the challenges posed by changing IT requirements.
- To develop competent computer management professionals with strong ethical values

ELIGIBILITY:

Every candidate seeking admission to the program shall have Bachelors Degree or a Post-Graduate Degree with at least 45% marks from any statutory University.

OR

Candidates who do not posses requisite eligibility at the time of application but plan to appear in the final year of a degree examination may also apply. However, such candidates can be provisionally considered only upto a specified date notified by the University.

Age Limit: No Upper Age Limit. As per State Government norms.

Admission Procedure:

The admissions will be done as per merit in the entrance test conducted by the university

Seats: 60 (reservation as per state Govt. rules).

About the Department of Computer Science & Applications:

The Department of Computer Science and Applications was established in the year 1990 with the aim of developing professionals in main stream of Computer Science and Applications. The Department offers PhD and Postgraduate degree courses through UTD. The Department studies market trends and new developments in the area, conducts massive brainstorming with leading academia and industry professionals to develop the curricula.

The Department is committed to provide excellence in teaching. It has a rich knowledge

pool of well-trained faculty and a modern computer lab enabled to impart all required knowledge, along with its own library with latest books on various advanced areas in computers. Regular hands-on workshops are conducted to update students with the latest technology.

Between 2005 to 2010 Department had also run M.Sc. Bioinformatics/ APGDBI Course with partial financial support from UGC Innovative Program & DBT BIF scheme, which in subsequent years were suspended due to financial crunch/ decline in no. of students.

Many of the alumni are working in top companies including IBM, MicroSoft, American Express Bank, Wipro, Infosys, Samsung, Microsoft, WorldPay, CISCO, HCL, Jindal, Web Dunia and more in India as well as abroad, apart from few also being entrepreneurs and some other, in academics with prestigious institutions.

Program Objectives:

- To empower students with basic skills of various technologies.
- To develop the ability to identify, analyze, formulate and develop computer applications.
- To enable the students to select modern computing tools and techniques and use them with dexterity.
- If you are looking for challenging roles in the IT industry, computer science research, web and mobile development, data analysis, information security etc., this programme is for you.

Career Path after Completing the Programme:

- Software Developer Programmer
- Systems Analyst
- Computer Support Engineer
- Database Administrator
- Systems Administrator
- Web Designer & Developer
- Network Administrator
- Data Entry Operator

DEPARTMENT OF COMPUTER SCIENCE

A.P.S. UNIVERSITY, REWA (M.P.)

B.Sc. (Honrs.) IN COMPUTER SCIENCE

(3 years, Six Semester Full time Course, Under Self Supporting)

2017-18 Onwards

Subject to the approval of higher bodies after due amendment in the ordinance, where ever necessary

Detailed syllabus B. Sc. CS 2008-09, based on the decision taken by BOS, Computer Science, APSU, in view of the guidelines issued by M.P. Higher Education Commission'

R.K. Kateria

Dr. Manish K. Gupta

Shrivastava 4/12/18

DEPARTMENT OF COMPUTER SCIENCE

A.P.S. UNIVERSITY, REWA (M.P.)

	B.Sc. (Honours) Computer Science Syllabus				
CLASS/SEMESTER	B. Sc.(CS) Hons.	CCE Max/Min	Theory Max/Min	Practical Max/Min	Total Marks
	BSCSH-101-Foundation Course I	15/5	85/28		100
	BSCSH-102-Programming Fundamental Using C	15/5	85/28		100
	BSCSH-103-Computer System Architecture	15/5	85/28		100
	BSCSH-104-Math's I - Calculus and Linear Algebra	15/5	85/28		100
	BSCSH-105-Physics I - Machanics and Properties of Matters	15/5	85/28		100
	BSCSH-106 Lab I -Problem based on BSCSH102 and BSCSH103			50/17	50
	BSCSH-107-LabII -Problem based on BSCSH104 and BSCSH105			50/17	50
SECOND SEM	BSCSH-201-Foundation Course II	15/5	85/28		100
	BSCSH-202-Internet Technology	15/5	85/28		100
	[redacted]-203-Data Structure	15/5	85/28		100
	BSCSH-204 Math's - II - Calculus and Geometry	15/5	85/28		100
	BSCSH-205-Physics II - Thermodynamics and Statistical Physics	15/5	85/28		100
	BSCSH206- lab I Problem based on BSCSH202 and BSCSH203			50/17	50
	BSCSH207- LabII Problem based on BSCSH204 and BSCSH205			50/17	50
THIRD SEM	BSCSH-301-Foundation Course III	15/5	85/28		100
	BSCSH-302- Computer Networks	15/5	85/28		100
	BSCSH-303- Data Base Management System and SQL	15/5	85/28		100
	BSCSH-304- Math's III - Basic Probability and Statistics	15/5	85/28		100
	BSCSH-305-PhysicsIII - Optics	15/5	85/28		100
	BSCSH306- Lab IProblem based on BSCSH302and BSCSH303			50/17	50
	BSCSH307- LabII Problem based on BSCSH304 and BSCSH305			50/17	50
FOURTH SEM	BSCSH401- Foundation Course IV	15/5	85/28		100
	BSCSH402 –Software Engineering	15/5	85/28		100
	BSCSH403 –Discrete Mathematics	15/5	85/28		100
	BSCSH404 – Math's IV-Real Analysis and /Differential Equations	15/5	85/28		100
	BSCSH405 –PhysicsIV - Quantum Mechanics and Solid State	15/5	85/28		100
	BSCSH406-Lab I Problem based on BSCSH402 and BSCSH403			50/17	50
	BSCSH407- LabIIProblem based on BSCSH404 and BSCSH405			50/17	50
FIFTH SEM	BSCSH501-Foundation Course V	15/5	85/28		100
	BSCSH502-Java Programming	15/5	85/28		100
	BSCSH503-System Programming	15/5	85/28		100
	BSCSH504 –Cloud Computing	15/5	85/28		100
	BSCSH505- Design And Analysis of Algorithm	15/5	85/28		100
	BSCSH506- Labi Problem based on BSCSH502 and BSCSH503			50/17	50
	BSCSH507- LabII Problem based on BSCSH504 and BSCSH505			50/17	50
SIXTH SEM	BSCSH601 –Theory of Computation	15/5	85/28		100
	BSCSH602 –Computer Graphics	15/5	85/28		100
	BSCSH603 – .Net Programming	15/5	85/28		100
	BSCSH604- Operating System	15/5	85/28		100
	BSCSH605- Minor Project			100	
	BSCSH606- LabIProblem based on BSCSH601 and BSCSH603			50/17	50
	BSCSH607- Lab II Problem based on BSCSH602 and BSCSH604			50/17	50
	Grand Total				3600

R.K. Kelaa
10-6-2016

(Manish K. Gupta)
4/12/18

AWADHESH PRATAP SINGH UNIVERSITY
REWA (MP) 486003

CBCS

CURRICULAM & SYLLABUS

(as per unified ordinance no. 14 of MP universities)

for

MASTER OF COMPUTER APPLICATION (MCA)

(AICTE Approved)

w.e.f. Session 2020-21

Course code : 060

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A. P. S. UNIVERSITY, REWA (MP)

MASTER OF COMPUTER APPLICATION (MCA)

SCHEME OF EXAMINATION(w.e.f. Session 2020-21)

Course code : 060

FIRST SEMESTER

Paper Code	Paper Name	Course Type	Credit	Theory Marks Max(Min)	CCE Marks Max(Min)	Total Marks (Min)
10601	Computer Organization	CC	4	60(21)	40(20)	100
10602	Mathematical Foundation of Computer Science	CC	4	60(21)	40(20)	100
10603	Operating System	CC	4	60(21)	40(20)	100
10604	DBMS	CC	4	60(21)	40(20)	100
10605	Problem Solving using C & C++	GE	4	60(21)	40(20)	100
10606	Lab I – DBMS	LAB	2			100(50)
10607	Lab II – Prog. in C & C++	LAB	2			100(50)
10608	Comprehensive Viva	Viva	4			100(50)
	TOTAL		28			800

SECOND SEMESTER

Paper Code	Paper Name	Course Type	Credit	Theory Marks Max(Min)	CCE Marks Max(Min)	Total Marks (Min)
20601	Data Structure and Analysis of Algorithms	CC	4	60(21)	40(20)	100
20602	Software Engineering	CC	4	60(21)	40(20)	100
20603	Computer Graphics & Visualization	CC	4	60(21)	40(20)	100
206041 206042	Elective I : (Any one from the following) • Artificial Intelligence • Cloud Computing	DCE	4	60(21)	40(20)	100
20605	Java Programming & Technologies	GE	4	60(21)	40(20)	100
20606	Lab I – Computer Graphics	LAB	2			100(50)
20607	Lab II – Java	LAB	2			100(50)
20608	Comprehensive Viva	Viva	4			100(50)
	TOTAL		28			800

THIRD SEMESTER

Paper Code	Paper Name	Course Type	Credit	Theory Marks Max(Min)	CCE Marks Max(Min)	Total Marks (Min)
30601	Compiler Design	CC	4	60(21)	40(20)	100
30602	Computer Networking & Internet	CC	4	60(21)	40(20)	100
306031 306032 306033 306034	Elective II : : (Any one from the following) • Cryptography & Network Security • Mobile Computing • Software Quality Assurance • Internet of Things	DCE	4	60(21)	40(20)	100
306041 306042 306043 306044	Elective III : : (Any one from the following) • Dot Net Technology • Python Programming • Data Warehousing & Mining • Big Data Analytics & Visualization	DCE	4	60(21)	40(20)	100
30605	Web Applications Development	GE	4	60(21)	40(20)	100
30606	Lab I – Based on Elective III	LAB	2			100(50)
30607	Lab II – Web Applications Development	LAB	2			100(50)
30608	Comprehensive Viva	Viva	4			100(50)
	TOTAL		28			800

FOURTH SEMESTER

Paper Code	Paper Name	Course Type	Credit	Theory Marks Max(Min)	CCE Marks Max(Min)	Total Marks (Min)
40601	Major Project / Dissertation Evaluation	CC	16			400(200)
40602	Major Project / Dissertation Internal Evaluation	CC	4			100(50)
40603	Comprehensive Viva	Viva	4			100(50)
	TOTAL		24			600

CC = Core Course, GE = Generic Elective, DCE = Discipline Centric Elective

TOTAL CREDITS : 28+28+28+24=108 Grand Total : 800+800+800+600=3000

Programme Objectives (POs):

Master of Computer Applications (MCA) is a full-time four-semester course, which includes one semester of project work in the fourth semester. The objective of MCA programme is to impart quality education in Computer Science and its applications, so that students are well prepared to face the challenges of the highly competitive computer industry. The course structure ensures overall development of the student, while concentrating on imparting technical skills required for computer/IT profession.

Programme Specific Outcomes (PSOs):

The programme is designed to

PSO1: enable the students to apply the computing and soft skills acquired in the MCA program for designing and developing innovative applications for the betterment of the society.

PSO2 : Identify, formulate, research literature, and solve complex computing problem searching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

PSO3: provide exposure to techniques that would enable the students to design, implement and evaluate IT solutions.

PSO4 : Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team to manage projects and in multidisciplinary environments.

PSO5 : Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices.

PSO6 : Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practices.

PSO7: To enable the students to meet the challenges of research and development in computer science and applications.

AWADHESH PRATAP SINGH UNIVERSITY
REWA (M.P.)

BACHELOR OF COMPUTER APPLICATION
(BCA I, II, III)
(I - VI Sem.)

2008-2009

BACHELOR OF COMPUTER APPLICATION (BCA)

CURRICULUM AT A GLANCE

The course structure, break-up of marks and duration of examination in paper and practical shall be as per the scheme approved by the Board of Studies of Computer Science.

BCA (First Semester)

PAPER CODE	NOMENCLATURE OF PAPER	MAX	MIN
FC –I-1	Foundation Course –I	50	50
FC –I-2	Foundation Course –II	50	
FC –I-3	Foundation Course –III	50	
BCA –1	Fundamentals of Computers	50	17
BCA-2	Introduction to Operating System	50	17
BCA-3	Introduction to PC Software	50	17
BCA-4	Basic Mathematics –I	50	17
BCA-5 (PR)	Operating System	50	17
BCA-6 (PR)	PC Software	50	17
BCA-7	Minor Project (Internal Evaluation)	50	17

BCA (Second Semester)

PAPER CODE	NOMENCLATURE OF PAPER	MAX	MIN
FC –II-1	Foundation Course –I	50	50
FC –II-2	Foundation Course –II	50	
FC –II-3	Foundation Course –III	50	
BCA-8	Programming in C	50	17
BCA-9	Digital Electronics	50	17
BCA-10	Analysis & Design of Information System	50	17
BCA-11	Computer Oriented Accounting	50	17
BCA-12 (PR)	Digital Electronics & Accounting Software	50	17
BCA-13 (PR)	Programming in C	50	17
BCA-14	Minor Project (External Evaluation)	50	17

BCA (Third Semester)

PAPER CODE	NOMENCLATURE OF PAPER	MAX	MIN
FC –III-1	Foundation Course –I	50	
FC –III-2	Foundation Course –II	50	50
FC –III-3	Foundation Course –III	50	
BCA –15	OOPs Using C++	50	
BCA-16	Data Structure	50	17
BCA-17	Basic Mathematics –II	50	17
BCA-18	System Software	50	17
BCA-19 (PR)	C++ & Data Structure	50	17
BCA-20 (PR)	DBMS [illegible]	50	17
BCA-21	Minor Project (Internal Evaluation)	50	17

BCA (Fourth Semester)

PAPER CODE	NOMENCLATURE OF PAPER	MAX	MIN
FC –IV-1	Foundation Course –I	50	
FC –IV-2	Foundation Course –II	50	50
FC –IV-3	Foundation Course –III	50	
BCA-22	Web Technologies	50	17
BCA-23	Database Management System	50	17
BCA-24	Visual Programming Language	50	17
BCA-25	Computer Network	50	17
BCA-26 (PR)	Web Technologies & DBMS	50	17
BCA-27 (PR)	Visual Programming Language	50	17
BCA-28	Minor Project (External Evaluation)	50	17

K. K. Tatara Shrivastava

BCA (Fifth Semester)

PAPER CODE	NOMENCLATURE OF PAPER	MAX	MIN
FC –V-1 FC –V-2 FC –V-3	Foundation Course –I Foundation Course –II Foundation Course –III	50 50 50	50
BCA-29	Computer Graphics	50	17
BCA-30	Discrete Mathematics	50	17
BCA-31	Programming in JAVA	50	17
BCA-32	Operating System	50	17
BCA-33 (PR)	Java	50	17
BCA-34 (PR)	Graphics	50	17
BCA-35	Minor Project (Internal Evaluation)	50	17

BCA (Sixth Year)

PAPER CODE	NOMENCLATURE OF PAPER	MAX	MIN
FC –VI-1 FC –VI-2 FC –VI-3	Foundation Course –I Foundation Course –II Foundation Course –III	50 50 50	50
BCA –36	Software Engineering	50	17
BCA –37	RDBMS	50	17
BCA-38	Real Life Project (Internal & External Evaluation)	Int 100 Ext. 100 =200	66
BCA-39(PR)	RDBMS	50	17

(PR) = Practical Paper

DEPARTMENT OF CHEMISTRY

COURSE STRUCTURE

for

M.Sc. (Chemistry)
Four Semesters (Two Year)

Programme

Based on

Choice Based Credit System (CBCS)
(As per Ordinanc-14)

I & II Semester 2020-21
III & IV Semester 2021-22

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Semester Course of M.Sc. Chemistry

Programme	**:**	**M.Sc. Chemistry**
Programme Code	**:**	**13**
Duration	**:**	**4 Semester (Two Year)**

Chemistry Program Goals

1. To provide specific knowledge in chemistry that stresses scientific reasoning and analytical problem solving with a molecular perspective.
2. To provide students with the skills required to succeed, the chemical industry research and professional.
3. To expose the students to a breadth of experimental techniques using modern instrumentation.

Learning Objectives

1. Student will learn the broad knowledge of different field of chemistry.
2. The student will understand the advance knowledge of spectroscopy, thermodynamic principles, nature of chemical reactions and energy related problems.
3. The student will understand the interdisciplinary nature of chemistry and to integrate knowledge of mathematics, physics and other disciplines to a wide variety of chemical problems for industries and quality control.
4. The student will learn the laboratory skills needed to design, safely conduct and interpret chemical research.
5. The student will acquire a foundation of chemistry of sufficient breadth and depth to enable them to understand and critically interpret the advance chemical literature.
6. The student will develop the ability to effectively communicate scientific information and research results in written and oral formats.
7. The student will learn professionalism, including the ability to work in teams and apply basic ethical principles in life and profession. He/She will understand how to interpret the results and apply them in solving the problems.

PROGRAM OUTCOME (PO)

The following outcome reflects the terminal skills that all Master Post Graduates should be able to demonstrate program completion.

PO1: The chemistry course is designed to give core knowledge with the skills to critically assess and solve problems, related to chemical science.

PO2: The different papers sub-discipline such as organic, inorganic, physical and analytical chemistry give detail knowledge and applications in respective specialization.

PO3: The Masters students will have working knowledge of chemical instrumentation and laboratory techniques.

PO4: The training will the help students to design and conduct independent work in industry or academia.

PROGRAM SPECIFIC OUTCOME (PSO)

PSO1

- Understanding of fundamental and advanced concepts of Quantum Chemistry and coordination chemistry.
- Knowledge of fundamentals of inorganic spectroscopy, their interpretation and their applications.
- Study of various chemical reagents and their role in inorganic synthesis and inorganic analysis.

PSO2

- Basic knowledge of Organic chemistry
- Study of various reaction intermediates and reaction pathways.
- Understanding of various organic reactions, rearrangement, cross-coupling reactions and applications.

PSO3

- Basic understanding of basic area of physical chemistry.
- Knowledge of various theories of physical chemistry such as thermodynamics, electrochemistry and properties of solutions.
- Applications of physical chemistry in various fields.

PSO4

- Basic understanding of analytical chemistry.
- Knowledge of volumetric methods of analysis and gravimetric analysis.
- Study of spectro-analytical techniques and their applications to various chemical systems.

Eligibility: B.Sc. with Mathematics and Biology as a subject.

Age Limit: No age limit.

Admission Procedure: The admission will be done as per merit of qualifying examinations.

Vision of the University

To be the premier institution that offers teaching and learning programmes of the best quality, graduate students who excel and become leaders in the chosen profession contributing to the community, the nation and the world, and prepares individuals of the highest moral fibre. The vision of university is:

To create an ideal society and an intellectual environment that initiates, nourishes and perpetuates values of co-existence and to fulfill and achieve excellence. The university, under the dynamic leadership of our honourable Vice-chancellor is working on quite a few ambitious plans. The idea is to develop the university as a knowledge city.

M.Sc. CHEMISTRY
(FOUR SEMESTER COURSE)

SCHEME OF EXAMINATION
(CBCS Syllabus)
(Effective from 2020-21)

SEMESTER –I

Paper	**Course No.**	**Course**	**Credit**	**Marks**
Paper I	MCH-401	Inorganic Chemistry I	**4**	**100(60+40)**
Paper II	MCH-402	Organic Chemistry I	**4**	**100(60+40)**
Paper III	MCH-403	Physical Chemistry I	**4**	**100(60+40)**
Generic Elective				
Paper IV	MCH-404	(a) Mathematics for Chemists[1] (b) Biology for Chemists[2]	**4**	**100(60+40)**
Practical	Inorganic + Organic + Physical (2+2+2)		**6**	**50+50+50**
		Comprehensive viva voce	**4***	**100**
Total Marks			**26**	**650**

*Virtual Credit
[1] Strictly for the students without Mathematics in B.Sc.
[2] Strictly for the students without Biology in B.Sc.

SEMESTER –II

Paper	**Course No.**	**Course**	**Credit**	**Marks**
Paper V	MCH-405	Inorganic Chemistry II	**4**	**100(60+40)**
Paper VI	MCH-406	Organic Chemistry II	**4**	**100(60+40)**
Paper VII	MCH-407	Physical Chemistry II	**4**	**100(60+40)**
Generic Elective				
Paper VIII	MCH-408	Spectroscopy and Diffraction Methods	**4**	**100(60+40)**
Practical	Inorganic + Organic + Physical (2+2+2)		**6**	**50+50+50**
		Comprehensive viva voce	**4***	**100**
Total Marks			**26**	**650**

*Virtual Credit

SEMESTER– III

Paper	Course No.	Course	Credit	Marks
Paper–I	MCH-501	Application of Spectroscopy	**4**	**100(60+40)**
Paper–II	MCH-502	Photochemistry	**4**	**100(60+40)**
Discipline Elective (any one)				
Paper–III	MCH-503 MCH-504 MCH-505	Analytical Chemistry Heterocyclic Chemistry Electrochemistry	**4**	**100(60+40)**
Generic Elective (any one)				
Paper–IV	MCH-506 MCH-507	Industrial Chemistry Medicinal Chemistry	**4**	**100(60+40)**
Practical		Inorganic + Organic + Physical (2+2+2)	**6**	**50+50+50**
		Comprehensive viva voce	**4***	**100**
Total Marks			**26**	**650**

*Virtual Credit

SEMESTER– IV

Paper	Course No.	Course	Credit	Marks
Paper V	MCH-508	Organotransition Metal Chemistry	**4**	**100(60+40)**
Paper VI	MCH-509	Solid State Chemistry	**4**	**100(60+40)**
Discipline Elective (any one)				
Paper VII	MCH-510 MCH-511 MCH-512	Natural Product Organic synthesis Polymer Chemistry	**4**	**100(60+40)**
Generic Elective (any one)				
Paper VIII	MCH-513 MCH-514	Environmental Chemistry Computer-Aided Drug Discovery	**4**	**100(60+40)**
Practical		Inorganic + Organic + Physical (2+2+2)	**6**	**50+50+50**
		Comprehensive viva voce	**4***	**100**
Total Marks			**26**	**650**

*Virtual Credit

Grand Total Marks M.Sc. (Ist to IVth Sem) = **2600**

SEMESTER –I
Paper-I
MCH-401: INORGANIC CHEMISTRY-I

SYLLABUS

M. Sc. Biotechnology

2020-21

IV Semester Course

School of Environmental Biology

Awadhesh Pratap Singh University Rewa M. P.

M. Sc. Biotechnology (Choice base credit system)
A. P. S. University Rewa M. P.
Syllabus for Session 2020-21
The Scheme of Examination
First Semester

Paper Code	Paper Name	Course Type	E. A.	I. A.	Total Marks	Total Credits.
101	Cell Biology	Core	80	20	100	4
102	Biochemistry	Core	80	20	100	4
103	Molecular Biology	Core	80	20	100	4
104	*Applied Microbiology	Generic Elective	80	20	100	4
105	Practical	-	100	-	100	4
106	Comprehensive viva-voce	-	50	-	50	2
Semester Total					**550**	**22**

Second Semester

Paper Code	Paper Name	Course Type	E. A.	I. A.	Total Marks	Total Credits.
201	Bioinformatics and Biostatistics	Core	80	20	100	4
202	Immunotechnology	Core	80	20	100	4
203	Plant Biotechnology	Core	80	20	100	4
204	*Biophysical and Molecular Techniques	Generic Elective	80	20	100	4
205	Practical	-	100	-	-	4
206	Comprehensive viva-voce	-	50	-	-	2
Semester Total					**550**	**22**

Third Semester

Paper Code	Paper Name	Course Type	E. A.	I. A.	Total Marks	Total Credits.
301	Genetic Engineering	Core	80	20	100	4
302	Metabolism: Basic Concept And Design	Core	80	20	100	4
303	**(A)Bioprocess Engineering And Technology **(B)Medical Biotechnology	Discipline centric elective Discipline centric elective	80	20	100	4
304	*Environmental Biotechnology	Generic Elective	80	20	100	4
305	Practical	-	-	-	100	4
306	Comprehensive viva-Voce	-	-	-	50	2
Semester Total					**550**	**22**

Fourth Semester

Paper Code	Paper Name	Course Type	E. A.	I. A.	Total Marks	Total Credits.
401	Entrepreneurship In Biotechnology &Intellectual Property Rights	Core	80	20	100	4
402	**(A)Plant Tissue culture technology ** (B) Animal Cell Culture techniques	Discipline centric elective Discipline centric elective	80	20	100	4
403	Dissertation and Presentation		-	-	150	6
404	Comprehensive viva-Voce				50	2
Semester Total					400	16
Grand Total					**2150**	**84**

SYLLABUS

M. Sc. Environmental Biology (Choice Based Credit System)

Schemes of Examination (Session- 2020-21)

Semester-I

S.No.	Course Name & Code	Course Type	Theory	Internal Assessment	Total Marks	Credit
1.	Ecological Principles	Core	80	20	100	4
2.	*Basic Methods in Ecology	Generic Elective	80	20	100	4
3.	Populations and Biotic Community	Core	80	20	100	4
4.	Earth Environment and Climatology		80	20	100	4
5.	Practical	-	-	-	100	4
6.	Comprehensive Viva Voce	-	-	-	50	2
Semester Total					**550**	**22**

Semester-II

S.No.	Course Name & Code	Course Type	Theory	Internal Assessment	Total Marks	Credit
1.	Biodiversity Conservation	Core	80	20	100	4
2.	Ecological Statistics	Core	80	20	100	4
3.	Environmental Pollution	Core	80	20	100	4
4.	*Global Environmental Issues	Generic Elective	80	20	100	4
5.	Practical	-	-	-	100	4
6.	Comprehensive Viva Voce	-	-	-	50	2
Semester Total					**550**	**22**

Semester-III

S.No	Course Name & Code	Course Type	Theory	Internal Assessment	Total Marks	Credit
1.	Environmental Microbiology	Core	80	20	100	4
2.	Conservative & Management of Natural Resources	Core	80	20	100	4
3.	**(A). Pollution Control and Waste Management	Discipline Centric Elective	80	20	100	4
	**(B). Air Pollution Management	Discipline Centric Elective				
4.	*Environmental Law's and Policies	Generic Elective	80	20	100	4
5.	Practical	-	-	-	100	4
6.	Comprehensive Viva Voce	-	-	-	50	2
Semester Total					**550**	**22**

Semester-IV

S.No	Course Name & Code	Course Type	Theory	Internal Assessment	Total Marks	Credit
1.	Ecotoxicology	Core	80	20	100	4
2.	Environmental Biotechnology	Core	80	20	100	4
3.	**(A). Forest Ecology	Discipline Centric Elective	80	20	100	4
	**(B). Water Pollution Management	Discipline Centric Elective				
4.	Environmental Impact Assessment	Generic Elective	80	20	100	4
5.	Practical	-	-	-	100	4
6.	Comprehensive Viva Voce	-	-	-	50	2
Semester Total					**550**	**22**
Grand Total					**2200**	**88**

* Students may choose this course as a Generic Elective or may choose a Generic Elective offered by other UTDs or may choose a course offered by MOOCs through SWAYAM.

** The department offers Two- Discipline Centric Elective Courses in III and IV semester with internal choices as A or B. Students of this program will have a choice to select one course from the available internal choice in each Discipline Centric Elective course in III and IV semester.

Generic Elective Courses of this program are also available to students of other discipline/ programs of the University Teaching Departments.

Centre for Biotechnology studies
A.P.S. University Rewa (M.P.)
B.Sc. (Hon's) Biotechnology,

First Semester

Scheme of Marks

Paper Code	**Paper Name**	**External Assessment**		**Internal Assessment**		**Practical's Marks**		**Total**
		Max.	**Min.**	**Max.**	**Min.**	**Max.**	**Min.**	**Max. Marks.**
BT101	**Botany I (Lower Plants)**	35	13	15	06			50
BT102	**Zoology I (Invertebrates)**	35	13	15	06			50
BT103	**Basics of Inorganic and Physical Chemistry**	35	13	15	06			50
BT104	**Cell Biology**	35	13	15	06			50
	Practical –I (Based on Paper I and II)					50	18	50
	Practical –II (Based on Paper III and IV)					50	18	50
Total								**300**

Note: Internal assessment marks will be based on written test of concerned subject.

Centre for Biotechnology Studies
A.P.S. University Rewa (M.P.)
B.Sc. (Hon's) Biotechnology,

Second Semester

Scheme of Marks

Paper Code	**Paper Name**	**External Assessment**		**Internal Assessment**		**Practical Marks**		**Total**
		Max.	**Min.**	**Max.**	**Min.**	**Max.**	**Min.**	**Max. Marks.**
BT201	Botany II (Higher Plants)	35	13	15	06			50
BT202	Zoology II (Vertebrates)	35	13	15	06			50
BT203	Basics of Organic Chemistry	35	13	15	06			50
BT204	Genetics & Molecular Biology	35	13	15	06			50
	Practical –I (Based on Paper I and II)					50	18	50
	Practical –II (Based on Paper III and IV)					50	18	50
Total								**300**

Note: Internal assessment marks will be based on written test of concerned subject.

Fourth Semester

Scheme of Marks

Paper Code	Paper Name	External Assessment Max.	External Assessment Min.	Internal Assessment Max.	Internal Assessment Min.	Practical's Marks Max.	Practical's Marks Min.	Total Max. Marks.
BT401	Biophysical and Molecular techniques	35	13	15	06			50
BT402	Immunology	35	13	15	06			50
BT403	Human physiology & Developmental Biology	35	13	15	06			50
BT404	Entrepreneurship and IPR	35	13	15	06			50
	Practical –I (Based on Paper I and II)					50	18	50
	Practical –II (Based on Paper III and IV)					50	18	50
Total								**300**

Note: Internal assessment marks will be based on written test of concerned subject.

B.Sc. Biotechnology (Hon's)
Semester-IV
Paper-13th (BT-401)

Centre for Biotechnology Studies
A.P.S. University Rewa (M.P.)
B.Sc. (Hon's) Biotechnology,

Fifth Semester

Scheme of Marks

Paper Code	**Paper Name**	**External Assessment**		**Internal Assessment**		**Practical's Marks**		**Total**
		Max.	**Min.**	**Max.**	**Min.**	**Max.**	**Min.**	**Max. Marks.**
BT501	Recombinant DNA Technology	35	13	15	06			50
BT502	Animal Biotechnology and Cell culture	35	13	15	06			50
BT503	Bioenergetics and Metabolism	35	13	15	06			50
BT504	Environmental Studies.	35	13	15	06			50
	Practical –I (Based on Paper I and II)					50	18	50
	Practical –II (Based on Paper III and IV)					50	18	50
					Total			**300**

Note: Internal assessment marks will be based on written test of concerned subject.

Centre for Biotechnology Studies
A.P.S. University Rewa (M.P.)
B.Sc. (Hon's) Biotechnology,

Sixth Semester

Scheme of Marks

Paper Code	Paper Name	External Assessment		Internal Assessment		Practical Marks		Total
		Max.	Min.	Max.	Min.	Max.	Min.	Max. Marks.
BT601	Plant Biotechnology and tissue culture	35	13	15	06			50
BT602	Medical biotechnology and Bioinformatics	35	13	15	06			50
BT603	Environmental Biotechnology	35	13	15	06			50
BT604	Industrial Biotechnology	35	13	15	06			50
	Practical –I (Based on Paper I and II)					50	18	50
	Practical –II (Based on Paper III and IV)					50	18	50
Total								**300**

Note: Internal assessment marks will be based on written test of concerned subject.

Centre for Microbiology Studies
A.P.S. University Rewa (M.P.)

B.Sc. (Hons.) Microbiology

First Semester

Scheme of Marks

Paper Code	Paper Name	External Assessment Max.	External Assessment Min.	Internal Assessment Max.	Internal Assessment Min.	Practical's Marks Max.	Practical's Marks Min.	Total Max. Marks.
MB101	**Botany I (Lower Plants)**	35	13	15	06			50
MB102	**Zoology I (Invertebrates)**	35	13	15	06			50
MB103	**Basics of Inorganic and Physical Chemistry**	35	13	15	06			50
MB104	**Basics of Microbiology & Bacteriology**	35	13	15	06			50
	Practical –I (Based on Paper I and II)					50	18	50
	Practical –II (Based on Paper III and IV)					50	18	50
		Total						**300**

Note: Internal assessment marks will be based on written test of concerned subject.

Centre for Microbiology Studies
A.P.S. University Rewa (M.P.)

B.Sc. (Hons.) Microbiology

Second Semester

Scheme of Marks

Paper Code	Paper Name	External Assessment		Internal Assessment		Practical's Marks		Total
		Max.	Min.	Max.	Min.	Max.	Min.	Max. Marks.
MB201	**Botany II (Higher Plants)**	35	13	15	06			50
MB202	**Zoology II (Vertebrates)**	35	13	15	06			50
MB203	**Basics of Organic Chemistry**	35	13	15	06			50
MB204	**Cell Biology**	35	13	15	06			50
	Practical –I (Based on Paper I and II)					50	18	50
	Practical –II (Based on Paper III and IV)					50	18	50
		Total						**300**

Note: Internal assessment marks will be based on written test of concerned subject.

Centre for Microbiology Studies
A.P.S. University Rewa (M.P.)

B.Sc. (Hons.) Microbiology

Third Semester

Scheme of Marks

Paper Code	Paper Name	External Assessment Max.	External Assessment Min.	Internal Assessment Max.	Internal Assessment Min.	Practical's Marks Max.	Practical's Marks Min.	Total Max. Marks.
MB301	**Computer Application**	35	13	15	06			50
MB302	**Fundamentals of Biochemistry**	35	13	15	06			50
MB303	**Microbial Genetics and Molecular Biology**	35	13	15	06			50
MB304	**Biostatistics**	35	13	15	06			50
	Practical –I (Based on Paper I and II)					50	18	50
	Practical –II (Based on Paper III and IV)					50	18	50
		Total						**300**

Note: Internal assessment marks will be based on written test of concerned subject.

Centre for Microbiology Studies
A.P.S. University Rewa (M.P.)

B.Sc. (Hons.) Microbiology

Fourth Semester

Scheme of Marks

Paper Code	Paper Name	External Assessment Max.	External Assessment Min.	Internal Assessment Max.	Internal Assessment Min.	Practical's Marks Max.	Practical's Marks Min.	Total Max. Marks.
MB401	**Biophysical and Molecular techniques**	35	13	15	06			50
MB402	**Virology**	35	13	15	06			50
MB403	**Microbial Physiology & Metabolism**	35	13	15	06			50
MB404	**Entrepreneurship and IPR**	35	13	15	06			50
	Practical –I (Based on Paper I and II)					50	18	50
	Practical –II (Based on Paper III and IV)					50	18	50
		Total						**300**

Note: Internal assessment marks will be based on written test of concerned subject.

Centre for Microbiology Studies
A.P.S. University Rewa (M.P.)

B.Sc. (Hons.) Microbiology

Fifth Semester

Scheme of Marks

Paper Code	Paper Name	External Assessment		Internal Assessment		Practical's Marks		Total Max. Marks.
		Max.	Min.	Max.	Min.	Max.	Min.	
MB501	**Recombinant DNA Technology**	35	13	15	06			50
MB502	**Mycology & Plant pathology**	35	13	15	06			50
MB503	**Immunology**	35	13	15	06			50
MB504	**Environmental Studies.**	35	13	15	06			50
	Practical –I (Based on Paper I and II)					50	18	50
	Practical –II (Based on Paper III and IV)					50	18	50
		Total						**300**

Note: Internal assessment marks will be based on written test of concerned subject.

Centre for Microbiology Studies
A.P.S. University Rewa (M.P.)

B.Sc. (Hons.) Microbiology

Sixth Semester

Scheme of Marks

Paper Code	Paper Name	External Assessment		Internal Assessment		Practical's Marks		Total
		Max.	Min.	Max.	Min.	Max.	Min.	Max. Marks.
MB601	**Medical Microbiology**	35	13	15	06			50
MB602	**Food & Dairy Microbiology**	35	13	15	06			50
MB603	**Microbial Ecology**	35	13	15	06			50
MB604	**Industrial Microbiology**	35	13	15	06			50
	Practical –I (Based on Paper I and II)					50	18	50
	Practical –II (Based on Paper III and IV)					50	18	50
		Total						**300**

Note: Internal assessment marks will be based on written test of concerned subject.

CENTRE FOR BIOTECHNOLOGY & MICROBIOLOGY STUDIES,

SCHOOL OF ENVIRONMENTAL BIOLOGY,

A.P.S. UNIVERSITY, REWA (M.P.)

BSc. BIOTECHNOLOGY SEM-1				
S.No.	**Paper code**	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
1.	C1	Cell Biology	MAJOR	06
2.	C2	Animal Diversity -1	MINOR	06
3.	GEC1	Chemistry -1	GEC	04
4.	AECC1	English	AECC	04
5.				
BSc. BIOTECHNOLOGY SEM-2				
		PAPER NAME	**PAPER CATEGORY**	**CREDIT**
	C3	Genetics & Molecular Biology	MAJOR	06
	C4	Animal Diversity -2	MINOR	06
	GEC2	Chemistry -2	GEC	04
	AECC2	Environmental Studies	AECC	04
BSc. BIOTECHNOLOGY SEM-3				
		PAPER NAME	**PAPER CATEGORY**	**CREDIT**
	C5	Bio-analytical Tools	MAJOR	06
	C6	Plant Biotechnology	MINOR	06
	GEC3	Biochemistry & Metabolism	GEC	04
	SEC1	Industrial Fermentation	SEC	04
BSc. BIOTECHNOLOGY SEM-4				
		PAPER NAME	**PAPER CATEGORY**	**CREDIT**
	C7	Immunology	MAJOR	06
	C8	General Microbiology & Physiology	MINOR	06
	GEC4	Biotechnology & Human Welfare	GEC	04
	SEC2	Molecular Diagnostics	SEC	04
BSc. BIOTECHNOLOGY SEM-5				
		PAPER NAME	**PAPER CATEGORY**	**CREDIT**
	C9	Recombinant DNA Technology	Major	06
	DSE1	Environmental Biotechnology	DSE	04
	SEC3	Animal Biotechnology	SEC	04
		Field Project & Training-1 (Bioprocess Technology)		06
BSc. BIOTECHNOLOGY SEM-6				
		PAPER NAME	**PAPER CATEGORY**	**CREDIT**
	C10	Developmental Biology	Major	06
	DSE2	Forensic Science	DSE	04
	DSE3	Medical Microbiology	DSE	04
		Field Project & Training 2 (Genomics & Proteomics)		06

BSc. BIOTECHNOLOGY SEM-7				
		Paper Name	**PAPER CATEGORY**	**CREDIT**
	C11	Enzymology	MAJOR	06
	DSE4	Bioethics & Bio-safety	DSE	04
	C12	Research Methodology	Minor	04
		Field Project & Training 3 (……)		06
BSc. BIOTECHNOLOGY SEM-8				
		Paper Name	**PAPER CATEGORY**	**CREDIT**
	C13	Medical Biotechnology	MAJOR	06
	C14	Biostatistics & Bioinformatics	MINOR	04
		Research Project (……)		10

ABBREVATION:

CC- CORE COURSE (MAJOR/MINOR)
DSE- DISCIPLINE SPECIFIC ELECTIVE
SEC- SKILL ENHANCMENT COURSE
AECC-ABILITY ENHANCMENT COMPULSORY COURSE
GEC- GENERIC ELECTIVE COURSE