

Indira Gandhi University Meerpur Rewari

(A State University established under Haryana Act No.29 of 2013)



Examination Scheme & Syllabus for Post Graduate Diploma in Computer Applications (Semester-I to II)

OUTCOME BASED EDUCATION SYSTEM /

LEARNING OUTCOME CURRICULUM FRAMEWORK

OBES / LOCF, CBCS CURRICULUM (2022-23)

(w.e.f. 2022-23)

VISION AND MISSION OF THE DEPARTMENT

VISION

To train students to be highly effective instructors, researchers, and contributors to IT companies globally. Be regarded as a prestigious centre of scholarly achievement worldwide.

MISSION

1. To advance research and education in IT domain.
2. To create skilled employees for businesses and industries based on latest IT technologies like artificial intelligence, data science and IoT etc.
3. To offer learning environments that are centered on the needs of the students in order to help them develop as people as a whole.

Programme Outcomes (PO), PGDCA, Department of CSE, Indira Gandhi University, Meerpur, Rewari

PO1	Knowledge	Capable of demonstrating comprehensive disciplinary knowledge gained during course of study.
PO2	Research Aptitude	Capability to ask relevant/ appropriate questions for identifying, formulating and analyzing the research problems and to draw conclusion from the analysis.
PO3	Communication	Ability to communicate effectively on general and scientific topics with the scientific community and with society at large.
PO4	Problem Solving	Capability of applying knowledge to solve scientific and other problems.
PO5	Individual and Team Work	Capable to learn and work effectively as an individual, and as a member or leader in diverse teams, multidisciplinary settings.
PO6	Investigation of Problems	Ability of critical thinking, analytical reasoning and research based knowledge including design of experiments, analysis and interpretation of data to provide conclusions.
PO7	Modern Tool usage	Ability to use and learn techniques, skills and modern tools for scientific practices.
PO8	Science and Society	Ability to apply reasoning to assess the different issues related to society and the consequent responsibilities relevant to the professional scientific practices.
PO9	Life-Long Learning	Aptitude to apply knowledge and skills that are necessary for participating in learning activities throughout life.
PO10	Ethics	Capability to identify and apply ethical issues related to one's work; avoid unethical behaviour such as fabrication of data, committing plagiarism and unbiased truthful actions in all aspects of work.
PO11	Project Management	Ability to demonstrate knowledge and understanding of the latest IT technologies and apply these to manage projects.

Programme Educational Objectives (PEOs):

The Department of CSE has formulated the Programme Educational Objectives (PEO's) with those in fields. The Programme educational objectives (PEO) are the statement that describes the career and professional achievement after receiving the degree. The PEO's of the PGDCA are as follows:

PEO1: To have fundamental as well as advanced knowledge of the Information Technologies.

PEO2: To provide the professional services to IT industries, Research organization, in the domain of super specialization.

PEO3: To opt for higher education, disciplinary & multi-disciplinary research and to be a life-long learner.

Programme Specific Outcomes (PSO's):

The Programme outcomes (PSO) are the statement of competencies/ abilities. PSOs are the statement that describes the knowledge and the abilities the post-graduate will have by the end of Programme studies.

PSO1: The detailed functional knowledge of theoretical concepts and experimental aspects of computer science.

PSO2: To integrate the gained knowledge with various contemporary and evolving areas in computer sciences like Artificial Intelligence, Machine Learning, Data Science etc.

PSO3: To understand, analyze, plan and implement qualitative as well as quantitative problems in computer science.

PSO4: Provide opportunities to excel in academics, research or Industry.

Mapping of PEO's with PO's and PSO's

[illegible]

General objectives of the course

The broad objective of the PGDCA programme is to prepare post graduates for productive careers in software industry, corporate sector, Govt. organizations and academia by providing skill based environment for teaching and research in the core and emerging areas of the discipline. The Programme's thrust is on giving the students a thorough and sound background in theoretical and skill-oriented courses relevant to the latest computer software development. The programme emphasizes the application of software technology to solve mathematical, computing, communications/networking and commercial problems. This PG Diploma Programme has been designed with a semester approach in mind. The first year courses are aimed at skills development in computers using various technologies and focused on core courses providing conceptual frame work and the second year provides the specialization and the project work.

1. Produce knowledgeable and skilled human resources which are employable in IT and ITES.
2. Impart knowledge required for planning, designing and building complex Application Software Systems as well as provide support to automated systems or application.
3. Produce entrepreneurs who can develop customized solutions for small to large Enterprises.
4. To develop academically competent and professionally motivated personnel, equipped with objective, critical thinking, right moral and ethical values that compassionately foster the scientific temper with a sense of social responsibility.
5. To develop students to become globally competent.
6. To inculcate Entrepreneurial skills among students

Expected Programme Outcomes

The **Post Graduate Diploma in Computer Applications (PGDCA)** Programme will prepare its graduates to achieve:

1. The understanding to apply knowledge of computing and technological advances appropriate to the programme.
2. Skills to analyze a problem, and identify and define the logical modeling of solutions.
3. An ability to design implements and evaluate a computer-based system, process, component, or programme to meet stakeholder needs.
4. The knack to function effectively in teams to accomplish a common goal.
5. A sense of professional, ethical, legal, security and social issues and responsibilities.
6. Effectiveness in communicating with a wide range of audiences.
7. An ability to analyze the local and global impact of business solutions on individuals, organizations, and society.
8. An identification of the need to engage in continuing professional development.

Indira Gandhi University, Meerpur, Rewari
PGDCA Regular Programme
Syllabus and Scheme of Examination (CBCS)
w.e.f. 2020-21

A Bridge course (qualifying in nature) of duration 2-3 weeks will be given to students of non- IT background before the commencement of first year/semester classes.

Course Name	Hours
1. PGDCA-BC1-Foundation Programming language	20
2. PGDCA -BC2-Foundation for Mathematics and Architecture	10+10
3. PGDCA -BC3-Programming Language Lab	
4. Evaluation after Bridge Course	
Two (3 Hours) Theory of 100 marks	
One (3 Hours) Lab of 50 marks	

Note: A student has to take 40% marks to clear the bridge course. Its credit will not be added in the final mark sheet. A student has to compulsorily clear the bridge course to get the PGDCA Diploma.

PGDCA Semester-I

Course No.	Paper	(L:T:P)	Credits	University Exams	Internal Assessment	Total
PGDCA -2101	Object Oriented Programming with Java	5:0:0	5	80	20	100
PGDCA -2102	Modern OperatingSystem with UNIX	5:0:0	5	80	20	100
PGDCA -2103	Computer Networks	5:0:0	5	80	20	100
PGDCA -2104	Computer Graphics & Multimedia	4:0:0	4	80	20	100
PGDCA -2105	Software Engineering & Testing	4:0:0	4	80	20	100
PGDCA -2106	Software Lab-1 Java Programming Lab	0:0:4	2	80	20	100
PGDCA -2107	Software Lab-2 CG Lab	0:0:4	2	80	20	100
PGDCA -2108	Software Lab-3Unix Lab	0:0:4	2	80	20	100
PGDCA -2109	Seminar	-	1	-	-	25
PGDCA -2110	Self Study Paper	-	1	-	-	25
			31	640	160	850

*Practical Examination of PGDCA -2106, 2107 & 2108 may be conducted on the same day in 2 sittings each maximum of 4 hours.

PGDCA Semester-II

Course No.	Paper	(L:T:P)	Credits	University Exams	Internal Assessment	Total
PGDCA-2201	Data Structures and Algorithms	4:0:0	4	80	20	100
PGDCA-2202	Database Design Concepts	4:0:0	4	80	20	100
PGDCA-2203	Python Programming	4:0:0	4	80	20	100
PGDCA-2204	Cloud Computing	4:0:0	4	80	20	100
PGDCA-2205	Artificial Intelligence	4:0:0	4	80	20	100
PGDCA-2206	Software Lab-4 A. Data Structures Lab B. Python Programming Lab	0:0:4	2	80	20	100
PGDCA-2207	Software Lab-5 Database Lab	0:0:4	2	80	20	100
PGDCA-2208	Project	0:0:4	2	80	20	100
PGDCA-2209	Seminar	-	1	-	-	25
PGDCA-2210	Self Study Paper	-	1	-	-	25
	Total Credits		28	640	160	850

*Practical Examination of PGDCA-2206, 2207 & 2208 may be conducted on the same day in 2 sittings each maximum of 4 hours.

w.e.f. session 2020-21

Indira Gandhi University, Meerpur, (Rewari)



Examination Scheme and Syllabus

M.Sc. Geology

Choice Based Credit System

(Semester I to IV)

2020-21

Scheme of Examination
M.Sc. Geology
Choice Based Credit System
w.e.f. Session 2020-21

SEMESTER-I

Paper Code	Paper Name	Internal Marks	External Marks	Max Marks	Credits
GEOL-101	Geosciences-I	20	80	100	4
GEOL-102	Geosciences-II	20	80	100	4
GEOL-103	Mineralogy and Crystallography	20	80	100	4
GEOL-104	Igneous Petrology	20	80	100	4
GEOL-105	Structural Geology	20	80	100	4
GEOL-106	Practical based on GEOL-101 & GEOL-102 & GEOL-103	-	100	100	4
GEOL-107	Practical based on GEOL-104 & 105	-	100	100	4
GEOL-108	Geological Field Training-I	40	60	100	6
	Total	140	660	800	34

Note:

- Each theory paper will include 20% marks as internal assessment as per University rules.
- Each practical examination will be of 03 hours.
- Practical marks will include 10% marks for viva-voce and 10% for record files.
- Total Credits = 34

SEMESTER-II

Paper Code	Paper Title	Internal Marks	External Marks	Max Marks	Credits
GEOL-201	Geomorphology and Geotectonics	20	80	100	4
GEOL-202	Paleontology and Stratigraphy	20	80	100	4
GEOL-203	Metamorphic Petrology	20	80	100	4
GEOL-204	Engineering Geology	20	80	100	4
Or GEOL-205	Climatology and Oceanography				
GEOL-206	Practical based on GEOL-201 & GEOL-202	-	100	100	4
GEOL-207	Practical based on GEOL-203 & GEOL-204/GEOL-205	-	100	100	4
GEOL-OE-208	To be chosen by students of other departments	20	80	100	3
Foundation Elective	From the pool offered by University	20	80	100	2
	Total	100	600	700	26

Note:

- Each theory paper will include 20% marks as internal assessment as per University rules.
- Each practical examination will be of 03 hours.
- Practical marks will include 10% marks for viva-voce and 10% for record files.
- Total Credits = 26

SEMESTER III

Paper code	Paper Title	Internal Marks	External Marks	Max Marks	Credits
GEOL-301	Sedimentology and Fuel Geology	20	80	100	4
GEOL -302	Advanced Paleontology	20	80	100	4
GEOL -303	Ore Geology and Indian Mineral Resources	20	80	100	4
GEOL -304 Or GEOL-305	Mineral Exploration and Mining Geology SUMMER INTERNSHIP (ACADEMIC OR INDUSTRIAL)	20	80	100	4
GEOL -306	Practical based on GEOL-301 & GEOL-302	-	100	100	4
GEOL -307	Practical based on GEOL-303 & GEOL-304/GEOL-305	-	100	100	4
GEOL-308	Geological Field Training-II	40	60	100	6
GEOL-OE-309	To be chosen by students of other departments	20	80	100	3
OE	From the pool offered by University (Excluding the OEC offered by the Dept. of Geology)	20	80	100	3
	Total	140	660	800	33

Note:

- Each theory paper will include 20% marks as internal assessment as per University rules.
- Each practical examination will be of 03 hours.
- Practical marks will include 10% marks for viva-voce and 10% for record files.
- Total Credits = 33

SEMESTER-IV

Paper code	Paper Title	Internal Marks	External Marks	Max Marks	Credits
GEOL-401	Geochemistry	20	80	100	4
GEOL-402	Geohydrology	20	80	100	4
GEOL-403	Stratigraphy and Paleogeography	20	80	100	4
GEOL-404	Geophysical Prospecting and Instrumentation	20	80	100	4
GEOL-405 Or GEOL-406	Environmental Geology Or Remote Sensing & GIS	20	80	100	4
GEOL-407	Practical based on GEOL-401 and GEOL-402	-	100	100	4
GEOL-408	Practical based on GEOL-403 & GEOL-405/GEOL-406	-	100	100	4
	Total	100	600	700	28

Note:

- Each theory paper will include 20% marks as internal assessment as per University rules.
- Each practical examination will be of 03 hours.
- Practical marks will include 10% marks for viva-voce and 10% for record files.
- Total Credits = 28

Indira Gandhi University Meerpur Rewari

(A State University established under Haryana Act No.29 of 2013)



Examination Scheme & Syllabus for M.Sc. (Computer Science) (Semester-I to IV)

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OBES / LOCF, CBCS CURRICULUM (2022-23)

(w.e.f. 2022-23)

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To train students to be highly effective instructors, researchers, and contributors to IT companies globally. Be regarded as a prestigious centre of scholarly achievement worldwide.

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1. To advance research and education in IT domain.
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3. To offer learning environments that are centered on the needs of the students in order to help them develop as people as a whole.

Programme Outcomes (PO), M.Sc (CS), Department of CSE, Indira Gandhi University, Meerpur, Rewari

PO1	Knowledge	Capable of demonstrating comprehensive disciplinary knowledge gained during course of study.
PO2	Research Aptitude	Capability to ask relevant/ appropriate questions for identifying, formulating and analyzing the research problems and to draw conclusion from the analysis.
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Programme Educational Objectives (PEOs):

The Department of CSE has formulated the Programme Educational Objectives (PEO's) with those in fields. The Programme educational objectives (PEO) are the statement that describes the career and professional achievement after receiving the degree. The PEO's of the M.Sc. in Computer Science are as follows:

- PEO1:** To have fundamental as well as advanced knowledge of the Information Technologies.
- PEO2:** To provide the professional services to IT industries, Research organization, in the domain of super specialization.
- PEO3:** To opt for higher education, disciplinary & multi-disciplinary research and to be a life-long learner.

Programme Specific Outcomes (PSO's):

The Programme outcomes (PSO) are the statement of competencies/ abilities. PSOs are the statement that describes the knowledge and the abilities the post-graduate will have by the end of Programme studies.

- PSO1:** The detailed functional knowledge of theoretical concepts and experimental aspects of computer science.
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- PSO3:** To understand, analyze, plan and implement qualitative as well as quantitative problems in computer science.
- PSO4:** Provide opportunities to excel in academics, research or Industry.

Mapping of PEO's with PO's and PSO's

[illegible]

M.Sc. Computer Science Programme's Objectives:

The broad objective of the M.Sc. Computer Science programme is to prepare post graduates for productive careers in software industry, corporate sector, Govt. organizations and academia by providing skill based environment for teaching and research in the core and emerging areas of the discipline. The Programme's thrust is on giving the students a thorough and sound background in theoretical and skill-oriented courses relevant to the latest computer software development. The programme emphasizes the application of software technology to solve mathematical, computing, communications/networking and commercial problems. This Master's Degree Programme has been designed with a semester approach in mind. The first year courses are aimed at skills development in computers using various technologies and focused on core courses providing conceptual frame work and the second year provides the specialization and the project work.

1. Produce knowledgeable and skilled human resources which are employable in IT and ITES.
2. Impart knowledge required for planning, designing and building complex Application Software Systems as well as provide support to automated systems or application.
3. Produce entrepreneurs who can develop customized solutions for small to large Enterprises.
4. To develop academically competent and professionally motivated personnel, equipped with objective, critical thinking, right moral and ethical values that compassionately foster the scientific temper with a sense of social responsibility.
5. To develop students to become globally competent.
6. To inculcate Entrepreneurial skills among students

Expected Programme Outcomes:

The **M.Sc. in Computer Science (M.Sc.)** Programme will prepare its graduates to achieve:

1. The understanding to apply knowledge of computing and technological advances appropriate to the programme.
2. Skills to analyze a problem, and identify and define the logical modeling of solutions.
3. An ability to design implements and evaluate a computer-based system, process, component, or programme to meet stakeholder needs.
4. The knack to function effectively in teams to accomplish a common goal.
5. A sense of professional, ethical, legal, security and social issues and responsibilities.
6. Effectiveness in communicating with a wide range of audiences.
7. An ability to analyze the local and global impact of business solutions on individuals, organizations, and society.
8. An identification of the need to engage in continuing professional development.

INDIRA GANDHI UNIVERSITY, MEERPUR, REWARI

SYNOPSIS OF

SCHEME OF STUDIES & EXAMINATIONS 2 YEARS M.Sc. SEMESTER I-IV (2022-2023)

Total Credits: 102

Theory Subjects: 20

Total Labs excluding Seminars, Projects and MOOC/NPTEL course: 07

Total Teaching Schedule:

Lectures	Tutorials	Practical	Total
80	0	32(28+4)	112

Total Marks:

Sessional	End Term	Total
725	1450	2875

Itemized Break-up:

	No.	Hours in week	Marks	Credits	Total Theory and labs etc.
Theory Subjects	20	4	2000	80	28 +6 (project)
Labs	07	4	700	14	
Seminar	3	-	75	3	
Projects	1	6	100	3	
MOOC/NPTEL/ONLINE	1	-	-	3	
Total			2875	103	114

CHOICE BASED CREDIT SYSTEM SCHEME

Program Core Courses (PCC)			
Sr. No.	Name the Subject	No. of Lectures / Tutorial	No. of Credits
1	Discrete Mathematics	4	4
2	Data Structures and Algorithms	4	4
3	Database Design Concepts	4	4
4	Modern Operating System with UNIX	4	4
5	Computer Organization and Architecture	4	4
6	Object Oriented Programming with Java	4	4
7	Theory of Computation	4	4
8	Computer Networks	4	4
9	Computer Graphics & Multimedia	4	4
10	Software Engineering & Testing	4	4
11	Artificial Intelligence	4	4
12	Data Mining and warehouse	4	4
13	Analysis Design Algorithms	4	4
14	Scripting Technology	4	4
15	Elective-I	4	4
16	Machine Learning & Data Analytics using Python	4	4
17	Blockchain Technology and Quantum Computing	4	4
18	Principles of Systems Programming & Compiler Design	4	4
19	Cloud Computing	4	4
20	Elective-II	4	4
Total Credits			80

Skill Enhancement Courses (SEC) : Labs			
Sr. No.	Name the Lab	No. of contact hours	No. of Credits
1	Software Lab-1 Data Structure Lab	4	2
2	Software Lab-2 UNIX and DBMS Lab	4	2
3	Software Lab-3 JAVA Lab	4	2
4	Software Lab-4 CG Lab	4	2
5	Software Lab-5 MATLAB and Prolog Lab	4	2
6	Software Lab-6 Web Technology Lab	4	2
7	Software Lab-7 Python Lab	4	2
Total credits			14

List of Elective Papers

Elective Papers are being offered depending upon the availability of expertise and the required infrastructure determined by the University, any one of the following subjects (minimum 10 students are required for any elective subject.)

Elective-I	Elective-II
1. Network Security & Cryptography 2. Internet of Things (IoT) 3. Advanced Computer Architecture	1. Soft Computing 2. Digital Marketing 3. Edge and Fog Computing
Elective-III (NPTEL Courses)	
1. Social Networks 2. Deep Learning 3. GPU-Architecture Programming 4. Introduction to Industry 4.0 and IoT	

Skill Enhancement Course (SEC) : Projects

Sr. No.	Name the Lab	No. of contact hours	No. of Credits
1	Project	6	3

One MOOC/NPTEL/Online subject to be qualified in 4th semester of M.Sc.

PaperCode	Course	Course Requirements(Hrs.)	Credits	Total	CourseType
-----	MOOC/NPTEL/Online*	-	3		

* The MOOC/NPTEL/Online subject can be qualified in Semester 4th during the duration of the Programme through SWAYAM platform (UGC) and the duration of the course should be equal or more than 12 weeks.

Indira Gandhi University, Meerpur, Rewari
Master of Computer Science (M.Sc.) Regular Programme
Syllabus and Scheme of Examination (CBCS)
w.e.f. 2022-23

A Bridge course (qualifying in nature) of duration 2-3 weeks will be given to students of non-IT background before the commencement of first year/semester classes.

Course Name	Hours
1. M.Sc.-BC1-Foundation Programming language	20
2. M.Sc.-BC2-Foundation for Mathematics and Architecture	10+10
3. M.Sc.-BC3-Programming Language Lab	
4. Evaluation after Bridge Course	

Two (3 Hours) Theory of 100 marks

One (3 Hours) Lab of 50 marks

Note: A student has to take 40% marks to clear the bridge course. Its credit will not be added in the final mark sheet. A student has to compulsorily clear the bridge course to get the degree of M.Sc.

M.Sc. First Year
Semester-I

Course No.	Paper	(L:T:P)	Credits	University Exams	Internal Assessment	Total
M.SC.-2101	Discrete Mathematics	4:0:0	4	80	20	100
M.SC.-2102	Data Structures and Algorithms	4:0:0	4	80	20	100
M.SC.-2103	Database Design Concepts	4:0:0	4	80	20	100
M.SC.-2104	Modern Operating System with UNIX	4:0:0	4	80	20	100
M.SC.-2105	Computer Organization and Architecture	4:0:0	4	80	20	100
M.SC.-2106	Software Lab-1 Data Structure Lab	0:0:4	2	80	20	100
M.SC.-2107	Software Lab-2 UNIX and DBMS Lab	0:0:4	2	80	20	100
M.SC.-2108	Seminar	-	1	-	-	25
			25	560	140	725

Practical Examination of M.SC.-2106 & 2107 may be conducted on the same day in 2 sittings each maximum of 4 hours.

M.SC. First Year

Semester-II

Course No.	Paper	(L:T:P)	Credits	University Exams	Internal Assessment	Total
M.SC.-2201	Object Oriented Programming with Java	4:0:0	4	80	20	100
M.SC.-2202	Theory of Computation	4:0:0	4	80	20	100
M.SC.-2203	Computer Networks	4:0:0	4	80	20	100
M.SC.-2204	Computer Graphics &Multimedia	4:0:0	4	80	20	100
M.SC.-2205	Software Engineering & Testing	4:0:0	4	80	20	100
M.SC.-2206	Software Lab-3JAVA Lab	0:0:4	2	80	20	100
M.SC.-2207	Software Lab-4CG Lab	0:0:4	2	80	20	100
M.SC.-2208	Seminar	-	1	-	-	25
	Total Credits		25	560	140	725

Practical Examination of M.SC.-2206 & 2207 may be conducted on the same day in 2 sittings each maximum of 4hours.

M.SC. Second Year

Semester-III

Course No.	Paper	(L:T:P)	Credits	University Exams	Internal Assessment	Total
M.SC.-2301	Artificial Intelligence	4:0:0	4	80	20	100
M.SC.-2302	Data Mining and warehouse	4:0:0	4	80	20	100
M.SC.-2303	Analysis Design Algorithms	4:0:0	4	80	20	100
M.SC.-2304	Scripting Technology	4:0:0	4	80	20	100
M.SC.-2305	Elective-I (See in List)	4:0:0	4	80	20	100
M.SC.-2306	Software Lab-5 MATLAB and Prolog Lab	0:0:4	2	80	20	100
M.SC.-2307	Software Lab-6 Web Technology Lab	0:0:4	2	80	20	100
M.SC.-2308	Seminar	-	1	-	-	25
	Total Credits		25	560	140	725

Practical Examination of M.SC.-2306 & 2307 may be conducted on the same day in 2 sittings each maximum of 4 hours.

M.SC. Second Year

Semester-IV

Course No.	Paper	(L:T:P)	Credits	University Exams	Internal Assessment	Total
M.SC.-2401	Machine Learning & Data Analytics using Python	4:0:0	4	80	20	100
M.SC.-2402	Blockchain Technology and Quantum Computing	4:0:0	4	80	20	100
M.SC.-2403	Principles of Systems Programming & Compiler Design	4:0:0	4	80	20	100
M.SC.-2404	Cloud Computing	4:0:0	4	80	20	100
M.SC.-2405	Elective-II	4:0:0	4	80	20	100
M.SC.-2406	Software Lab-7 Python Lab	0:0:4	2	80	20	100
M.SC.-2407	Project	0:0:6	3	80	20	100
M.SC.-2408	Elective - III	-	3	-	-	-
	Total Credits		28	560	140	700

1. Industrial visit may also be conducted.
2. Practical Examination of M.SC.-2306 may be conducted on the same day in 2 sittings each maximum of 4 hours.

Note: For Elective-III course, the students will opt the NPTEL courses/online mode class by the university) and submit the certificate in the University/College. The credits will be transferred accordingly in their mark sheet by the university.

General Instructions

Seminar

Max. Marks-25

Students are required to prepare a presentation on any topic, not from syllabus, assigned by the teacher concerned in the department on the theme/topic such as review of research papers/articles published in national or internal journal or any other research based paper in his/her area of interest. Every candidate will have to deliver a seminar of 15-20 minutes duration on the assigned topic. The seminar will be delivered in the presence of students and teachers of the department on any fixed week day of the semester.

The seminar will be evaluated by an internal committee of two internal teachers, constituted by the Chairperson of the Department. The evaluation (internal evaluation only) will be based on the presentation of the student, depth of subject matter of the topic and answer to questions. There will be a Coordinator to be nominated by the Chairperson of the Department among the teachers of the Department.

Distribution of marks will be as follows:

1. Presentation = 10 Marks
2. Relevancy & Depth of subject matter of the topic = 10 Marks
3. Answers to the Questions = 5 Marks

**Indira Gandhi University
Meerpur, Rewari**



**इंदिरा गाँधी विश्वविद्यालय
मीरपुर, रेवाड़ी**

A State University Established under Haryana Act No. 29 of 2011
Recognized in U.G. & P.G. of UGC Act, 1956

**SCHEME OF EXAMINATION
&
SYLLABI
Of
BACHELOR OF BUSINESS ADMINISTRATION
From
2014-15**

BBA PROGRAMME FROM THE SESSION 2014-15**THIRD YEAR****Fifth Semester**

Paper No	Title of Paper(s)	External Marks	Internal Assessment/ Work-shop Marks	Practical Marks	Total Marks
BBAN501	Production and Materials Management	80	20	-	100
BBAN502	Company Law	80	20	-	100
BBAN503	Indian Business Environment	80	20	-	100
BBAN504	Computer Networking & Internet	50	-	50	100
BBAN505	Presentation Skills and Personality Development	80	20	-	100
BBAN506	Cyber Security	80	20	-	100
BBAN507	Summer Training Report	100	-	-	100
	TOTAL				700

Sixth Semester

Paper No	Title of Paper(s)	External Marks	Internal Assessment/ Work-shop Marks	Practical Marks	Total Marks
BBAN601	Income Tax	80	20	-	100
BBAN602	System Analysis & Design	80	20	-	100
BBAN603	Foundations of International Business	80	20	-	100
BBAN604	Consumer Protection	80	20	-	100
BBAN605	E-Commerce	50	-	50	100
BBAN606	Project Report	100	-	-	100
BBAN607	Comprehensive Viva-voce	100	-	-	100
	TOTAL				700



Examination Scheme & Syllabus for M.Sc. Chemistry (Semester-I to IV)

**OUTCOME BASED EDUCATION SYSTEM /
LEARNING OUTCOME CURRICULUM FRAMEWORK**

**OBES / LOCF, CBCS CURRICULUM (2022-23)
(w.e.f. 2022-23)**

VISION AND MISSION OF THE DEPARTMENT

VISION

To train students to be highly effective instructors, researchers, and contributors to chemical based industries and stakeholders globally. Be regarded as a prestigious centre of scholarly achievement worldwide.

MISSION

1. To advance chemical sciences research, science, and education.
2. To create skilled employees for businesses and industries based on chemistry's experimental methods and methodologies.
3. To offer learning environments that are centered on the needs of the students in order to help them develop as people as a whole.

Programme Outcomes (PO), M.Sc. Chemistry, Department of Chemistry, Indira Gandhi University, Meerpur, Rewari

PO1	Knowledge	Capable of demonstrating comprehensive disciplinary knowledge gained during course of study.
PO2	Research Aptitude	Capability to ask relevant/ appropriate questions for identifying, formulating and analyzing the research problems and to draw conclusion from the analysis.
PO3	Communication	Ability to communicate effectively on general and scientific topics with the scientific community and with society at large.
PO4	Problem Solving	Capability of applying knowledge to solve scientific and other problems.
PO5	Individual and Team Work	Capable to learn and work effectively as an individual, and as a member or leader in diverse teams, multidisciplinary settings.
PO6	Investigation of Problems	Ability of critical thinking, analytical reasoning and research based knowledge including design of experiments, analysis and interpretation of data to provide conclusions.
PO7	Modern Tool usage	Ability to use and learn techniques, skills and modern tools for scientific practices.
PO8	Science and Society	Ability to apply reasoning to assess the different issues related to society and the consequent responsibilities relevant to the professional scientific practices.
PO9	Life-Long Learning	Aptitude to apply knowledge and skills that are necessary for participating in learning activities throughout life.
PO10	Ethics	Capability to identify and apply ethical issues related to one's work, avoid unethical behaviour such as fabrication of data, committing plagiarism and unbiased truthful actions in all aspects of work.
PO11	Project Management	Ability to demonstrate knowledge and understanding of the scientific principles and apply these to manage projects.

Programme Educational Objectives (PEOs):

The Department of Chemistry has formulated the Programme Educational Objectives (PEO's) with those in fields. The Programme educational objectives (PEO) are the statement that describes the career and professional achievement after receiving the degree. The PEO's of the Master's degree in Chemistry are as follows:

PE01: To have fundamental as well as advanced knowledge of the chemistry domain.

PEO2: To provide the professional services to industries, Research organization, in the domain of super specialization.

PEO3: To opt for higher education, disciplinary & multi-disciplinary research and to be a life-long learner.

Programme Specific Outcomes (PSO's):

The Programme outcomes (PSO) are the statement of competencies/ abilities. PSOs are the statement that describes the knowledge and the abilities the post-graduate will have by the end of Programme studies.

PS01: The detailed functional knowledge of theoretical concepts and experimental aspects of chemistry.

PSO2: To integrate the gained knowledge with various contemporary and evolving areas in chemical sciences like analytical, synthetic, pharmaceutical etc.

PSO3: To understand, analyze, plan and implement qualitative as well as quantitative analytical synthetic and phenomenon-based problems in chemical sciences.

PSO4: Provide opportunities to excel in academics, research or Industry.

Mapping of PEO's with PO's and PSO's

[illegible]

General objectives of the course

Chemistry is the science of matter; the branch of the natural sciences dealing with the composition of substances, their properties and reactions. Chemistry is involved in almost everything with which we come in contact. The life processes of all organisms involve chemical changes. Chemistry enables the development of drugs to cure and alleviate diseases and prolong life span. It also connects the fundamental principles of physics to the other natural sciences - biology, botany, medicine, geology, ecology- in short, to the life sciences and the earth sciences. It is an experimental science and students need to be trained in practicals to get expertise in doing fine experiments and handle sophisticated instruments and statistically analyse the experimental data.

The Curriculum is so designed that it offers three specializations to the M.Sc. Chemistry students, which includes Physical, Organic, Inorganic Chemistry. Through this curriculum, a choice based credit system (CBCS) is being implemented for all round development of the students, giving a fair weightage to their interest. It would allow the students to develop their abilities in the disciplines of their own interest. The students pursuing this course will develop in depth understanding of various aspects of the subject. The conceptual understanding of structure and behaviour of elements (atoms), energy changes associated with the reactions, principles and rules that unite these phenomenon in to comprehensive system, development of experimental skills, designing and implementation of novel synthetic methods, developing the aptitude for academic and professional skills, acquiring basic concepts for structural elucidation with hyphenated techniques, understanding the fundamental biological processes are among such important aspects. This curriculum has an immense potential for chemistry and post graduate students to develop as a good chemistry teacher or as skilled chemists to undertake advanced research in laboratory or in Industry.

The Aims of the Programme include

- To inculcate basic and advanced knowledge of chemical sciences among students.
- To provide higher education, disciplinary and inter/multi-disciplinary research- oriented knowledge to the students to make them lifelong learners.
- To provide a learned, skilled and creative pool of graduates who are ready to take up challenging assignments in different kinds of chemical industries, research institutions and academia.
- To mould responsible, proactive citizens who are equipped with scientific thinking and skills to address problems of their locality
- Adequate blend of theory, computation and hands-on experiments.
- Modernized lab courses – close to recent/current research.

M. Sc. Chemistry (Four Semesters) Programme
Under Choice Based Credit System
Outcome Based Education System /
Learning Outcome Curriculum Framework (LOCF) Pattern
(Effective from the Academic Session 2022-23)

PROGRAMME SCHEME

Credits requirement for completion of the Programme	:	111
Credits Core Courses	:	88
Credits Discipline Centric Elective Courses	:	16
Credits Open Elective Courses	:	03
Credits Foundation Elective Courses	:	02
Credits Summer Training	:	02
Total Marks	:	2500

Semester-wise distribution of Credits -

Semester I	:	29 (CC-21, DCEC-8)
Semester II	:	33 (CC-21, DCEC-8, FC-2, Summer Training-2)
Semester III	:	28 (CC-25, OEC-3)
Semester IV	:	21 (CC-21)

CC	:	Core Course
DCEC	:	Discipline Centric Elective Course
OEC	:	Open Elective Course
FC	:	Foundation Elective Course

Scheme of Examination for M.Sc. Chemistry

Marks =650

Semester-I

Credits= 29

Paper Code	Subjects	Type of Course	Contact Hours Per Week	Credits	Total Marks
CHE-101	Inorganic Chemistry-I (Chemistry of Transition Metals)	CC	04	04	100
CHE-102	Physical Chemistry-I (Principles of Physical Chemistry)	CC	04	04	100
CHE-103	Organic Chemistry-I (Conceptual Organic Chemistry & Stereochemistry)	CC	04	04	100
Discipline Centric Elective Course (Any Two)					
CHE-104(a) CHE-104(b)	Biology for Chemists/ Mathematics for Chemists	DCEC	04	04	100
CHE-105	Statistical Techniques & its Applications	DCEC	04	04	100
CHE-106	Sustainable and Green Chemistry	DCEC	04	04	100
CHE-107	Practical-I Inorganic Chemistry	CC	06	03	50
CHE-108	Practical-II Physical Chemistry	CC	06	03	50
CHE-109	Practical-III Organic Chemistry	CC	06	03	50
Total			38	29	650

CC =Core Course

DCEC = Discipline Centric Elective Course

FEC=Foundation Elective Course

Scheme of Examination for M.Sc. Chemistry

Semester-II		Credits = 33			Marks =750	
Paper Code	Subjects	Type of Course	Contact Hours Per Week	Credits	Total Marks	
CHE-201	Inorganic Chemistry-II (Organometallic Chemistry & Molecular Clusters)	CC	04	04	100	
CHE-202	Physical Chemistry-II (Physical Chemistry: Concepts & Applications)	CC	04	04	100	
CHE-203	Organic Chemistry-II (Organic Reaction Mechanism & Rearrangement)	CC	04	04	100	
Discipline Centric Elective Course (Any Two)						
CHE-204	Basic Pericyclic & Photochemistry	DCEC	04	04	100	
CHE-205	Group Theory & Molecular Spectroscopy	DCEC	04	04	100	
CHE-206	Polymer materials	DCEC	04	04	100	
CHE-207	IT Skills	FEC	02	02	50	
CHE-208	Practical-I Inorganic Chemistry	CC	06	03	50	
CHE-209	Practical-II Physical Chemistry	CC	06	03	50	
CHE-210	Practical-III Organic Chemistry	CC	06	03	50	
CHE-211	Summer Training		--	02	50	
Total			40	33	750	

FEC = Foundation Elective Course

Scheme of Examination for M.Sc. Chemistry

Semester-III			Credits = 28		Marks =650	
Paper Code	Subjects	Type of Course	Contact Hours Per Week	Credits	Total Marks	
CHE-301	Organic Spectroscopy	CC	04	04	100	
CHE-302	Inorganic Spectroscopy	CC	04	04	100	
CHE-303	Analytical Chemistry	CC	04	04	100	
CHE-304(a) CHE-304(b) CHE-304(c)	Inorganic Chemistry Special-I/ Physical Chemistry Special-I/ Organic Chemistry Special-I	CC	04	04	100	
Open Elective Course						
CHE-305	To be chosen from the pools of open electives provided by the other departments of University	OEC	03	03	100	
CHE-306 (a) CHE-306 (b) CHE-306 (c)	Practical-I Inorganic Chemistry/ Physical Chemistry/ Organic Chemistry	CC	06	03	50	
CHE-307(a) CHE-307 (b) CHE-307 (c)	Practical-II Inorganic Chemistry/ Physical Chemistry/ Organic Chemistry	CC	06	03	50	
CHE-308(a) CHE-308 (b) CHE-308 (c)	Practical-III Inorganic Chemistry/ Physical Chemistry/ Organic Chemistry	CC	06	03	50	
Total				37	28	650

OEC = Open Elective Course

Scheme of Examination for M.Sc. Chemistry

Semester-IV Credits = 21

Marks =450

Paper Code	Subjects	Type of Course	Contact Hours Per Week	Credits	Total Marks
CHE-401(a) CHE-401(b) CHE-401(c)	Inorganic Chemistry Special-II/ Physical Chemistry Special-II/ Organic Chemistry Special-II	CC	04	04	100
CHE-402(a) CHE-402(b) CHE-402(c)	Inorganic Chemistry Special-III/ Physical Chemistry Special-III/ Organic Chemistry Special-III	CC	04	04	100
CHE-403(a) CHE- 403(b) CHE- 403(c)	Inorganic Chemistry Special-IV/ Physical Chemistry Special-IV/ Organic Chemistry Special-IV	CC	04	04	100
CHE-404(a) CHE-404 (b) CHE-404 (c)	Practical-IV Inorganic Chemistry/ Physical Chemistry/ Organic Chemistry/ Project	CC	06	03	50
CHE-405(a) CHE-405 (b) CHE-405 (c)	Practical-V Inorganic Chemistry/ Physical Chemistry/ Organic Chemistry/ Project	CC	06	03	50
CHE-406(a) CHE-406 (b) CHE-406 (c)	Practical-VI Inorganic Chemistry/ Physical Chemistry/ Organic Chemistry/ Project	CC	06	03	50
Total				21	450

Guidelines for Summer Training:-

Objective:

The objective of summer training is to render the students to work environment in the field of Chemistry at industry, academic institute and research institute. It helps them to learn the latest technologies, skills, methodologies and to build a strong foundation for their career growth. It will provide learning platform to students where they can enhance their ability, skills and become job ready. Particularly, Summer training Programme will:

- i) Enable the students to get important tips from the professionals to gain valuable practical experience.
- ii) Test the students' career interest.
- iii) Provide the students with in depth knowledge about career field.
- iv) Develop the students' job-related skills.
- v) Enhance relationship between the chemistry department and public as well as private sectors.

Outcome:

- i) Capability to acquire and apply fundamental principles of chemistry.
- ii) Become master in one's specialization.
- iii) Become updated with all latest changes occurring in particular field.
- iv) Capability and enthusiasm for self-improvement through professional development and life long learning.
- v) Awareness of the social, cultural, global and environmental responsibility as a chemist.

Duration of Summer Training:

The Summer/Industrial training will comprise of 3-4 weeks

Evaluation of Summer Training:

Sr. No.	Roll No.	Name of Students	Writing Report(20)	Attendance (15)	Viva-Voce (15)	Total (50)

Signature of Evaluation committee: