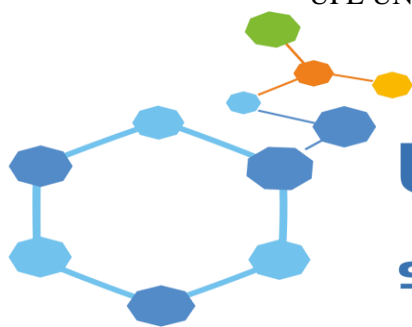


UPL UNIVERSITY OF SUSTAINABLE TECHNOLOGY



UPL UNIVERSITY
OF
SUSTAINABLE TECHNOLOGY



SRICT Institute of Science and Research
UPL UNIVERSITY OF SUSTAINABLE TECHNOLOGY

Documentation for Implementation of
NEP-2020
B.Sc. - Honours (Chemistry and Microbiology)

July 2023
Version 1.0

FOREWORD

When the country is in a crisis of clarity, the best thing that the Government can provide is a policy, which can steer its citizens towards a luminescent path. National Education Policy–2020 is one such effort by the Government of India towards providing a precise roadmap to come out of the foggy situation prevalent in the higher education system of the country in 2020. The National Education Policy (NEP) 2020, aimed at making India a global knowledge superpower, is path breaking and visionary. In the given scenario, NEP–2020 not only provides tangible and effective solutions for most of the problems ailing higher education in the country, but also lays a clear path for future needs.

This would transform India’s educational landscape from one of local presence to global leadership with quality, equity, inclusion and access. Implementation of this policy in true spirit will transform higher education in the country. In due course, it will also help in achieving the long-cherished goal of some of the Indian universities getting into the top 100 universities in the world.

Our university is one of the frontrunners in implementing the National Education Policy (NEP) 2020 in a phased manner. It is an outcome of several discussions held in committee meetings and various notifications received from GOG and GOI. We are doing the best to adopt NEP as per the guidelines of GoG and implemented at SRICT Institute of Science and Research from A.Y. 2023-24 for F.Y.B.Sc. This document is guiding source to bring reformative changes in the Indian education sector.

I am confident that the suggestions provided in this document for implementing the policy that would be very helpful in re-envisioning the universities to be in sync with the educational needs of the 21st century and beyond. Our university will not leave any stone unturned in successful implementation of NEP 2020 to emerge as a pioneering university for other academic institutes to follow.

For any further information, please contact

Dr. Snehal Lokhandwala
Dean (I/c), Science and Sustainability,
NEP Coordinator of UUST,
dean.science@upluniversity.ac.in
snehal.lokhandwala@upluniversity.ac.in
Mobile No.:8980966060

B. Glossary

ABC	: Academic Bank of Credit
AC	: Autonomous degree granting College
AEC	: Ability Enhancement Course
AI	: Artificial Intelligence
AICTE	: All India Council for Technical
CAD	: Computer Aided Design
CBCS	: Choice Based Credit System
CCFUP	: Curriculum and Credit Framework for Undergraduate Programme
CEC	: Consortium of Educational Communication
CCE	: Continuous and Comprehensive Evaluation
CGPA	: Cumulative Grade Point Average
EOC	: Equal Opportunity Cell
GER	: Gross Enrolment Ratio
GoG	: Government of Gujarat
HEI	: Higher Education Institution
ICT	: Information and Communications
IKS	: Indian Knowledge System
KCG	: Knowledge Consortium of Gujarat
LO	: Learning Outcome
LOBE	: Learning Outcome Based Education
LoI	: Letter of Intent
MCI	: Medical Council of India
MDC	: Multi-Disciplinary Course
MERU	: Multidisciplinary Education and Research University
MIL	: Modern Indian Language
MOOC	: Massive Open Online Course
MoU	: Memorandum of Understanding
NAAC	: National Assessment and Accreditation Council
NAD	: National Academic Depository
NCC	: National Cadet Corps
NCrF	: National Credit Framework
NCTE	: National Council of Teacher Education
NEP	: National Education Policy
NGO	: Non-Governmental Organization
NHEQF	: National Higher Education Qualification Framework
NITTTR	: National Institutes of Technical Teachers and Training Research
NPTEL	: National Programme on Technology Enhanced Learning
NRF	: National Research Foundation
NSQF	: National Skill Qualification Framework
NSS	: National Service Scheme
ODL	: Open and Distance Learning
OJT	: On-the-Job Training
PCI	: Pharmacy Council of India
PG	: Post-Graduate

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RIMS : Research Information Management System

RP : Research Project

SC : Schedule Caste

SEC : Skill Enhancement Course

SEE : Semester End Evaluation

SGPA : Semester Grade Point Average

SKP : Skill Knowledge Provider

SLM : Self Learning Materials

SOP : Standard Operating Procedure

SPOC : Single Point of Contact

ST : Schedule Tribe

STEM : Science, Technology, Engineering, and Mathematics

SWAYAM: Study Webs of Active-Learning for Young Aspiring Minds

UG : Under-Graduate

UGC : University Grants Commission

VAC : Value Added Course

RDC : Research and Development Cell

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C. Important Notifications and Guidelines released from UGC & GOG With respect to NEP-2020

- NEP-2020-English: From page No. 33 - Major problems faced by the higher education system and key changes required in current education system (https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf)
- Gujarati version of NEP-2020 (https://www.education.gov.in/sites/upload_files/mhrd/files/nep/2020/GUJARATI.pdf)
- IKS in Higher Education Curricula: Details of course and curriculum of IKS which will be integral part of current education system (https://www.ugc.gov.in/pdfnews/6436045_Guidelines- IKS-in-HE-Curricula.pdf)
- Training of faculty on IKS: Need and process of training of faculties on IKS ([https://www.ugc.gov.in/pdfnews/3746302_Guidelines-for-TrainingOrientation-of-Faculty- on-Indian-Knowledge-System-\(IKS\).pdf](https://www.ugc.gov.in/pdfnews/3746302_Guidelines-for-TrainingOrientation-of-Faculty- on-Indian-Knowledge-System-(IKS).pdf))
- Multiple Entry and Exit Options: The mechanism to adopt flexibility of multiple entry and exit in all HEIs to facilitate the students during academic cycle (<https://www.ugc.gov.in/e-book/GL%20Multiple%20Entry%20Exit.pdf>)
- Apprenticeship/Internship: Objective, process and roles of HEIs and Industries to implement internship/apprenticeship (<https://www.ugc.gov.in/pdfnews/910585ugc guidelines Apprenticeship Internship. pdf>)
- Open and Distance Learning (ODL): Guideline, process, and eligible institutes to provide the ODL mode of learning. https://www.ugc.gov.in/pdfnews/7421799_Current-Regulations.pdf
- Curriculum and Credit Framework: Suggestive points by UGC to design the course curriculum and define the credit structure (https://www.ugc.gov.in/pdfnews/7193743_FYUGP.pdf)
- Academic Bank of Credits: Objective, function and implementation methodology of Academic Bank of Credits into HEIs (https://www.ugc.gov.in/pdfnews/9327451_Academic-Bank-of-Credits-in-Higher-Education.pdf)
- Transforming Higher Education: Objective, approach and readiness of the institution to transform into multidiscipline institutions (https://www.ugc.gov.in/pdfnews/5599305_Guidelines-for-Transforming-Higher-Education- Institutions-into-Multidisciplinary-Institutions.pdf)
- National Credit Framework: Assignment of credits, Implementation, and operationalization of credit framework through ABC (https://www.ugc.gov.in/pdfnews/9028476_Report-of-National-Credit-Framework. pdf)
- National Higher Education Qualification Framework: NHEQF level qualification specification and Course Learning Outcome (https://www.ugc.gov.in/pdfnews/9028476_Report-of-NationalCredit-Framework. pdf)
- Blended mode of Learning: Infrastructure readiness at HEIs, implementation process, assessment and evaluation and suggested framework for blended mode of learning. (https://www.ugc.gov.in/pdfnews/6100340_Concept-Note-Blended-Mode-of-Teaching-and- Learning.pdf)

D. Overview of NEP 2020 as per SOP

The NEP-2020 offers an opportunity to effect a paradigm shift from a teacher-centric to a student-centric higher education system in India. It is outcome-based education, where the graduate attributes are first kept in mind to reverse-design the programs, courses and supplementary activities to attain learning outcomes. The learning outcomes-based curriculum framework for a degree in B.Sc. (Honours) is intended to provide a comprehensive foundation to the subject and to help students develop the ability to successfully continue with further studies and research in the subject. The framework is designed to equip students with valuable cognitive abilities and skills so that they are successful in meeting diverse needs of professional careers in a developing and knowledge-based society.

This document of Standard Operating Procedure (SOP) is prepared for the effective implementation of the NEP-2020 at SRICT Institute of Science and Research of UPL University of Sustainable Technology. The gigantic task of implementation of NEP involved series of discussions and brainstorming sessions with internal and external experts and several notifications received from GOG and GOI. Nation has framed the NEP and the Government of Gujarat has reformulated and adopted this policy. We implemented NEP 2020 at SRICT Institute of Science and Research from current semester.

Major Problems Faced by the Higher Education in India

Some of the major problems currently faced by the higher education system in India:

- A severely fragmented higher education system
- Less emphasis on the development of cognitive skills and learning outcomes
- A rigid separation of disciplines, with early specialization and streaming of students into narrow areas of study
- Limited access particularly in socio-economically disadvantaged areas, with few HEIs that teach in local languages
- Inadequate mechanisms for merit-based career management and progression of faculty and institutional leaders
- Lesser emphasis on research at most universities and colleges, and lack of competitive peer reviewed research funding across disciplines
- An ineffective regulatory system and large affiliating universities resulting in low standards of undergraduate education

Objectives of Standard Operating Procedure for NEP-2020

- To provide stepwise detailed instructions on how to carry out a task to implement the NEP- 2020, so that various functionaries can carry out a task correctly every time.
- To articulate the flow of work assignments, roles, and responsibilities of authorities.
- To ensure the proper execution of a variety of work processes from start to end.
- To remove the problem faced by the higher education system to implement the key changes suggested in NEP-2020.
- Moving towards a higher educational system consisting of large, multidisciplinary universities and colleges that offer medium of instruction or programmes in local/Indian languages.
- Moving towards a more multidisciplinary undergraduate education.
- Revamping curriculum, pedagogy, assessment, and student support for enhanced student experiences.
- Reaffirming the integrity of faculty and institutional leadership positions training and research.
- Proper liaison with National Research Foundation to get fund for outstanding peer-reviewed research and to actively carry out seed research in universities and colleges.
- “Light but Tight” regulation by Government of Gujarat.
- Increased access, equity, and inclusion through a range of measures, including greater opportunities for outstanding public education, online education, and Open Distance Learning.

E. Implementation Roadmap of NEP-2020 for the State of Gujarat

Government of Gujarat is committed to implement the NEP-2020 by keeping its objective into consideration and has taken several steps for enhancing the reach and quality of Higher and Technical education in the state. GoG has already prepared the roadmap for implementation of NEP-2020 and released it on January-2022. After multiple level of meeting and discussion, it has decided to implement the NEP-2020 in different phases, based on priority area of implementation.

Followings are the important areas of implementation (Major Reforms).

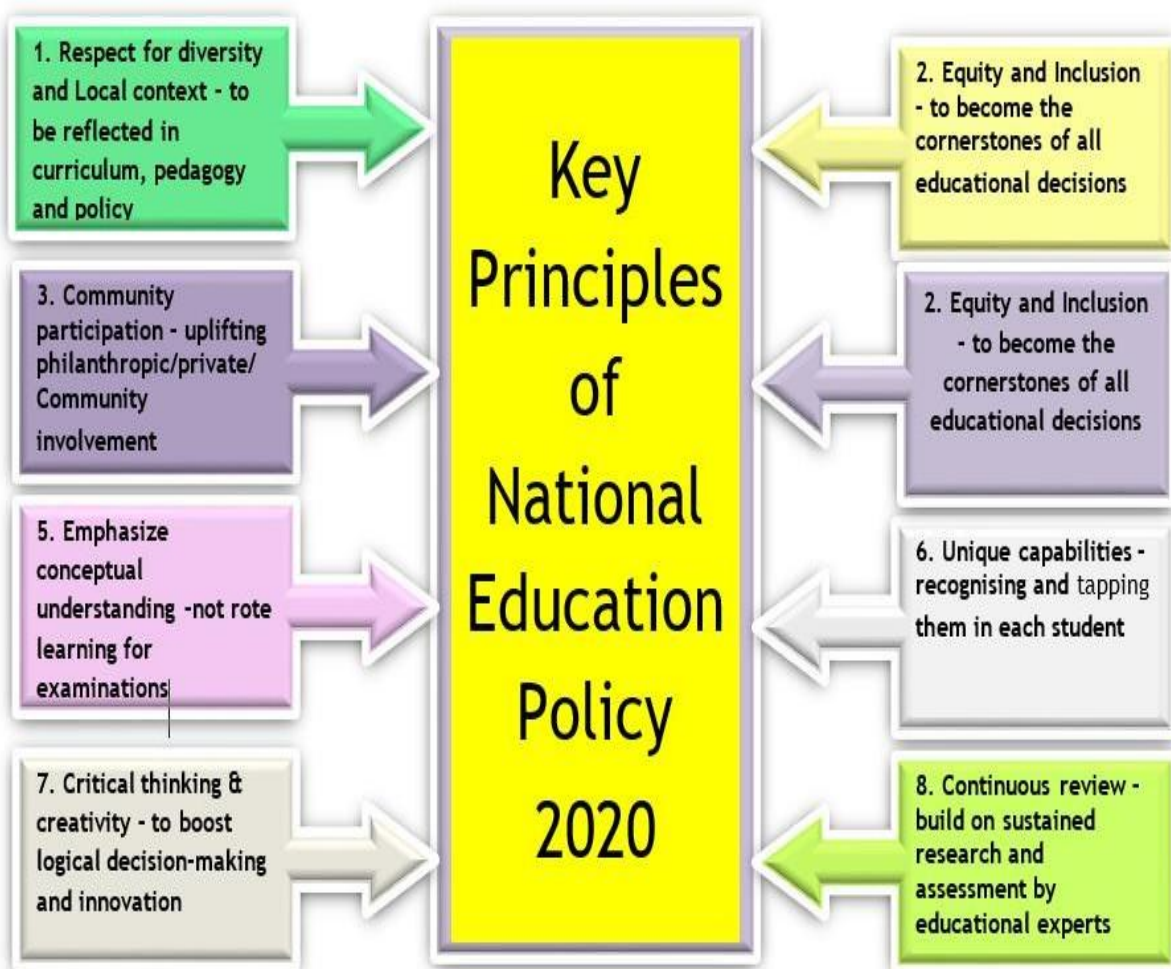
- Institutional Restructuring and Consolidation
- Toward a more holistic and multidisciplinary education
- Optimal learning environments and support of students
- Motivated, energized, and capable faculty
- Equity and Inclusion in higher education
- Teacher Education
- Re-imagine vocational education
- Catalyzing quality academic research through the National Research Foundation
- Transforming the regulatory system of higher education
- Effective governance, accreditation, and quality reforms
- Internationalization of education
- Embedded Internship based education
- Effective use of technology and integration
- Streamline Academic Bank of Credits and mechanism for multiple entry and multiple exit
- Promote Indian Knowledge System in mainstream education
- Support online and ODL mode of learning
- Research and Innovation intensive higher education institutions

1. Execution of NEP-2020 at SRICT-ISR

UPL University of Sustainable Technology has been established by Ankleshwar Rotary Education Society (ARES) to place Gujarat and India at one of the best education places of the World. We have two institutes at campus; SRICT and SRICT-ISR. Both institutes are providing quality education in the field of Engineering and Science respectively. We offered many programs such as B.E., M.E., Diploma, B.Sc., M.Sc., Ph.D. etc. SRICT is one of the top engineering college and SRICT-ISR is one of the most esteemed institute for B.Sc. and M.Sc. in Gujarat. Both the institutes are providing 100 % placement to all eligible students.

Nation has framed the NEP and the Government of Gujarat has reformulated policy NEP-2020. At present, NEP-2020 has been implemented at our university (SRICT-ISR) from July 2023 and gradually the changes shall be made as per the instruction given from KCG, Government of Gujarat.

Key Principles of NEP-2020 for SRICT-ISR



2. Credit Framework of Bachelor's degree programme (Honours)

A bachelor's degree in Chemistry with research or without Research is a 4-year degree course which is divided into 8 semesters.

NcrF Credit Level	Semester	Major (Core) Course	Minor (Elective) Course	Multi/Interdisciplinary Course (MDC)	Ability Enhancement Course (AEC)	Skill Enhancement Course (SEC)/Internship	Value Added Course (VAC)/ Indian Knowledge System (IKS)	Research Project (RP)/ On-the-Job Training (OJT)	Total Credit per Sem.	Qualification/Certificate
1 st Year	I	(8) Major -1 Major-2	(4) Minor 1	(4) MD C-1	(2) AEC-1	(2) SEC-1	(2) IKS -1	(NA)	22	UG Certificate
	II	(8) Major-3 Major-4	(4) Minor -2	(4) MDC-2	(2) AEC-2	(2) SEC-2	(2) VAC-1	NA	22	
1 st Year Total Credits		16	8	8	4	4	4	NA	44	
2 nd Year	III	(12) Major -5 Major -6 Major-7	NA	(4) MDC-3	(2) AEC-3	(2) SEC-3	(2) IKS-2	NA	22	UG Diploma
	IV	(12) Major -8 Major-9 Major-10	(4) Minor-3		(2) AEC-4	(2) SEC-4	(2) VAC-2		22	
2 nd Year Total Credits		40	12	12	8	8	8	NA	88	
3 rd Year	V	(12) Major-11 Major-12 Major-13	(8) Minor-4 Minor-5	NA	NA	(2) SEC-5	NA	NA	22	UG Degree
	VI	(12) Major-14 Major-15 Major-16	(4) Minor-6	NA	(2) AEC-5	(4) (Internship)	NA	NA	22	
3 rd Year Total Credits		64	24	12	10	14	8	NA	132	
4 th Year	VII	(12) Major -17 Major -18 Major-19	(4) Minor -7	NA	NA	NA	NA	(6) OJT/RP	22	UG Honors Degree/ UG Honors with Research Degree
	VIII	(12) Major -20 Major -21 Major-22	(4) Minor -8	NA	NA	NA	NA	(6) OJT /RP	22	
4 th Year Total Credits		88	32	12	10	14	8	12	176	

The curriculum of any programmes consists of Major stream courses, Minor stream courses, Multidisciplinary courses, Ability Enhancement Courses, Skill Enhancement Courses, and Value Added Courses. The course must be designed in such a way that there should not be disparity between streams, curricular and extra-curricular, vocational, and academic components.

B.Sc. (Honours) Credit scheme with no. of subjects for 4 years with Exit options:

Year	St 1 Year		nd 2 Year		rd 3 Year		th 4 Year		Total Subjects	Total Credits
Semester	I	II	III	IV	V	VI	VII	VIII		
	No. of Subjects									
Major Course	2	2	3	3	3	3	3	3	22	88
Minor Course	1	1	0	1	2	1	1	1	8	32
MDC Course	1	1	1	0	0	0	0	0	3	12
AEC Course	1	1	1	1	0	1	0	0	5	10
SEC Course	1	1	1	1	1	Intern ship	0	0	5	10
VAC Course	IKS-1	1	IKS-II	1	0	0	OJT/ RP	OJT/ RP	4	18
Total Credits	22	22	22	22	22	22	22	22		
Year wise credits	St 44(1 Year)		nd 88 (2 Year)		rd 132 (3 Year)		th 176 (4 Year)		47	176
Exit Options	Degree Certificate		UG Diploma		UG Degree		UG Honours Degree			

IKS-Indian Knowledge System
OJT- On Job Training
RP-research project

Major Courses: (64 + 04 Credits)

A learner must secure a minimum 50% of total credits (68/92 credits) from the major discipline courses for the 3-years/4-years bachelor's degree to be awarded a single major degree.

Major Courses (First year B.Sc.) at SRICT-ISR (16 Credits)

Discipline	Courses (Major)
Chemistry	<ol style="list-style-type: none"> 1. Periodic Elements and Chemical Bonding 2. Fundamentals of Analytical Chemistry 3. Hydrocarbon Chemistry 4. States of Matter & Colligative Properties

Major Courses (First year B.Sc.) at SRICT-ISR (16 Credits)

Discipline	Courses (Major)
Microbiology	<ol style="list-style-type: none"> 1. Introduction to Microbiology 2. Microbial Techniques 3. Biomolecules 4. Microbial Physiology and Metabolism

Minor Courses (24 Credits)

It is very specific, specialized, advanced, or supportive to the discipline / subject of study or which provides an extended scope, or which enables exposure to some other discipline/subject/domain or nurtures the candidate's skills. It has to be same or other discipline specific.

Students have to earn 50% of the total credits from minors in the relevant subject/discipline and another 50% of the total credits from a minor from any discipline as per their choice.

Minor Courses (First year B.Sc.) at SRICT-ISR (8 Credits)

Minor (Chemistry)
<ol style="list-style-type: none"> 1. Mathematical Physics and Optics 2. Properties of Matter and Mechanics

Minor Courses (First year B.Sc.) at SRICT-ISR (8 Credits)

Minor (Microbiology)
<ol style="list-style-type: none"> 1. Analytical Chemistry for Microbiologist 2. Basic Chemistry for Biologists

Multidisciplinary Courses (12 credits)

All UG students are required to undergo 3 introductory-level courses (4 credits of each course) relating to any of the broad disciplines given below. These courses are intended to broaden the intellectual experience and form part of liberal arts and science education. Students are not allowed to choose or repeat courses already undergone at the higher secondary level (12th class) in the proposed major and minor courses of the same level under this category.

Multidisciplinary Courses (First year B.Sc.) at SRICT-ISR (8 credits)

Category	Courses
MDC	<ol style="list-style-type: none"> 1. Natural Hazards 2. Multivariable Calculus 3. Basics of Biology 4. Nanotechnology: Fundamentals and Applications 5. Basic Linear Algebra 6. Biochemistry

Ability Enhancement Courses (AEC) (10 credits)

These courses shall be offered in combination of courses like Modern Indian Language (MIL) & English language focused on language and communication skills. The aim of these courses is to acquire and demonstrate the core linguistic skills, including critical reading and expository and academic writing skills to the students.

List of AEC Courses (First year B.Sc.) at SRICT-ISR (4 credits)

1. Functional Grammar and Composition
2. Practical English
3. Creative Writing Essentials
4. Corporate Communication in English

Skills Enhancement Courses (SEC) (10 credits)

These courses are aimed at imparting practical skills, hands-on training, soft skills, life skills, etc., to enhance the employability of students. The students of SRICT- Institute of Science and Research will opt one course in first semester and another one in second semester.

List of SEC Courses (First Year B.Sc.) at SRICT-ISR (4 credits)

1. Personality Development
2. Public Speaking
3. Time Management

Value Added Courses (VAC) (08 credits)

The course aims at enabling the students to acquire knowledge and understanding and equip them with the ability to apply the acquired knowledge, skills, attitudes, and values to take appropriate actions in professional and day-to-day life. These courses may be relevant to Indian Knowledge System, environmental science, digital and technical solutions.

The students of SRICT- Institute of Science and Research will opt one course in first semester (IKS-1) as per the guideline given by GOG and another one course they can take in second semester. Moreover, they can also opt SEC course on virtual mode.

Students can opt NCC/NSS in forth semester those who have completed NCC/NSS in previous three semesters. Student will earn 2 credits after completion of successful four semesters in NCC and NSS.

List of VAC Courses (First year B.Sc.) at SRICT-ISR (4 credits)

Semester	Subject	Remarks
I	Indian Knowledge System – I	To be given compulsorily as per SOP
II	Human Values and Ethics	One subject is offered by us and others shall be added as per the subjects offered on online portal

Internship/Apprenticeship/ OJT/ RP:

Students has to undergo training in any industry in 6th semester and they have to produce completion certificate duly signed by competent industry official once the internship is over. During 8th semester, Students would complete OJT/RP in campus or any industry.

3. Formation of Course Code:

To maintain uniformity and identification of level of courses amongst all the Universities, NEP has formed certain rules for course code. Rules are as follows:

- Coding is in combination of four letters and four digits
- First and Second letter of Major/Minor: First two letters of the program name (Chemistry-CH, Microbiology-MI, and Physics-PH etc.)
- Third letter reflects type of course: Major-M, Minor/Elective-E
- Three digit numbers reflect level of course; 200,201,203.....
- Fourth digit: reflects year of the Study
- Last letter: reflects the mode of the study (Online-O and Campus-C)

Our university has been formed the course code as per guidelines; such as CHM200-1C, CHE200-1C, AEC200-1C etc.

Levels of Courses and Course Coding:

The coding structure of the course may be as follows:

Coding	Level of Courses	Contents Inclusion
0-99	Pre-requisite Courses	An introductory level courses with no credits. It will be required to offer bridge course.
100-199	Foundation or introductory courses	Required to gain an understanding and basic knowledge about the subjects and help decide the subject or discipline of interest.
200-299	Intermediate-level courses	These courses are subject-specific courses intended to meet the credit requirements for minor or major areas of learning. (First Year Courses)
300-399	Higher-level courses	These courses are required for majoring in a disciplinary/interdisciplinary area of study to award of a degree. (Second Year Courses)
400-499	Advanced Courses	These courses would include lecture courses with practicum, seminar-based course, term papers, research methodology, advanced laboratory, experiments, research projects, hands-on-training, internship/apprenticeship/OJT projects at the undergraduate level or First year Postgraduate theoretical and practical courses. (Third Year Courses)
500-599	Advanced Courses	Courses required at first year master's degree level for a 2-year Master's degree programme
600-699	Advanced Courses	Courses required for second year of 2-year master's or 1-year Master's degree programme
700-799	Advanced Courses	Courses limited to Doctoral Level

4. Teaching Scheme F.Y.B.Sc. Chemistry

1st Semester:-

No.	Course Code	Category of course	Course title	Hours Per week			Tot. hrs	Credit	CCE	SEE	Total Marks
				L	T	P					
1	CHM200-1C	Major Course	Periodic Elements and Chemical Bonding	3	-	2	5	4	50	50	100
2	CHM201-1C	Major Course	Fundamentals of Analytical Chemistry	3	-	2	5	4	50	50	100
3	CHE200-1C	Minor Course	Mathematical Physics and Optics	3	-	2	5	4	50	50	100
4	MDCXXX-1C	Multidisciplinary Course	To be Selected	As per the credit scheme Of the subject Selected				4	50	50	100
6	AECXXX-1C	Ability Enhancement Course (AEC)	To be Selected					2	25	25	50
7	SECXXX-1C	Skill Enhancement Course (SEC)	To be Selected					2	25	25	50
8	VACXXX-1C	Value Added Courses (VAC)	To be Selected					2	25	25	50
			Total	18	01	08	26/25	22	275	275	550

Sem	Course Code	Multidisciplinary Course (MDC)
1	MDC200-1C	Natural Hazards
	MDC201-1C	Basics of Biology
	MDC202-1C	Multivariable Calculus
2	MDC203-1C	Nano Technology: Fundamentals and Applications
	MDC204-1C	Biochemistry
	MDC205-1C	Numerical Analysis
Sem	Course Code	Ability Enhancement Course (AEC)
1	AEC200-1C	Functional Grammar and Composition
	AEC201-1C	Practical English
2	AEC202-1C	Creative Writing Essentials
	AEC203-1C	Corporate Communication in English
Sem	Course Code	Skill Enhancement Courses (SEC)
1/2	SEC200-1C	Personality Development
	SEC202-1C	Public Speaking
	SEC201-1C	Time Management
Sem	Course Code	Value Added Courses (VAC)
1/2	VAC200-1C	IKS-I
1/2	VAC201-1C	Human Values and Ethics

Teaching Scheme B.Sc. Chemistry - 2nd Semester

No.	Course Code	Category of course	Course title	Hours Per week			Tot. hrs	Credit	CCE	SEE	Total Marks
				L	T	P					
1	CHM202-1C	Major Course	Hydrocarbon Chemistry	3	-	2	5	4	50	50	100
2	CHM203-1C	Major Course	States of Matter & Colligative Properties	3	-	2	5	4	50	50	100
3	CHE201-1C	Minor Course	Properties of Matter and Mechanics	3	-	2	5	4	50	50	100
4	MDCXXX-1C	Multidisciplinary Course	To be Selected	As per the credit scheme Of the subject Selected				4	50	50	100
6	AECXXX-1C	Ability Enhancement Course (AEC)	To be Selected					2	25	25	50
7	SECXXX-1C	Skill Enhancement Course (SEC)	To be Selected					2	25	25	50
8	VACXXX-1C	Value Added Courses (VAC)	To be Selected					2	25	25	50
Total				18	01	08	26/25	22	275	275	550

Sem	Course Code	Multidisciplinary Course (MDC)
1	MDC200-1C	Natural Hazards
	MDC201-1C	Basics of Biology
	MDC202-1C	Multivariable Calculus
2	MDC203-1C	Nano Technology: Fundamentals and Applications
	MDC204-1C	Biochemistry
	MDC205-1C	Numerical Analysis
Sem	Course Code	Ability Enhancement Course (AEC)
1	AEC200-1C	Functional Grammar and Composition
	AEC201-1C	Practical English
2	AEC202-1C	Creative Writing Essentials
	AEC203-1C	Corporate Communication in English
Sem	Course Code	Skill Enhancement Courses (SEC)
1/2	SEC200-1C	Personality Development
	SEC202-1C	Public Speaking
	SEC201-1C	Time Management
Sem	Course Code	Value Added Courses (VAC)
1/2	VAC200-1C	IKS-I
1/2	VAC201-1C	Human Values and Ethics

5. Teaching Scheme B.Sc. Microbiology-1st Semester

No.	Course Code	Category of course	Course title	Hours Per week			Tot. hrs	Credit	CCE	SEE	Total Marks
				L	T	P					
1	MIM200-1C	Major Course	Introduction to Microbiology	3	-	2	5	4	50	50	100
2	MIM201-1C	Major Course	Microbial Techniques	3	-	2	5	4	50	50	100
3	MIE200-1C	Minor Course	Analytical Chemistry for Microbiologists	3	-	2	5	4	50	50	100
4	MDCXXX-1C	Multidisciplinary Course	To be Selected	As per the credit scheme Of the subject Selected				4	50	50	100
6	AECXXX-1C	Ability Enhancement Course (AEC)	To be Selected					2	25	25	50
7	SECXXX-1C	Skill Enhancement Course (SEC)	To be Selected					2	25	25	50
8	VACXXX-1C	Value Added Courses (VAC)	To be Selected					2	25	25	50
			Total	18	01	08	26/25	22	275	275	550

Teaching Scheme B.Sc. Microbiology - 2nd Semester

No.	Course Code	Category of course	Course title	Hours Per week			Tot. hrs	Credit	CCE	SEE	Total Marks
				L	T	P					
1	MIM202-1C	Major Course	Biomolecules	3	-	2	5	4	50	50	100
2	MIM203-1C	Major Course	Microbial physiology and Metabolism	3	-	2	5	4	50	50	100
3	MIE201-1C	Minor Course	Basic chemistry for Biologists	3	-	2	5	4	50	50	100
4	MDCXXX-1C	Multidisciplinary Course	To be Selected	As per the credit scheme Of the subject Selected				4	50	50	100
6	AECXXX-1C	Ability Enhancement Course (AEC)	To be Selected					2	25	25	50
7	SECXXX-1C	Skill Enhancement Course (SEC)	To be Selected					2	25	25	50
8	VACXXX-1C	Value Added Courses (VAC)	To be Selected					2	25	25	50
			Total	18	01	08	26/25	22	275	275	550

6. Provision of Online Courses:

As per UGC Curriculum and Credit Framework for Undergraduate Programs, it has paved the way to offer a maximum 40% of the credit/learning through online courses. The Government of India has made online courses available on the SWAYAM platform.

Students can pursue the MOOCs on SWAYAM platform which will be offered by:

- ✓ UGC (University Grant Commission)
 - ✓ CEC (Consortium of Educational Communication)
 - ✓ NPTEL (National Programme on Technology Enhanced Learning)
 - ✓ IGNOU (Indira Gandhi National Open University)
 - ✓ NITTTR (National Institutes of Technical Teachers and Training Research)
 - ✓ AICTE (All India Council for Technical Education)
- If a student chooses an online course, they must register for MOOCs through SWAYAM and provide the department head and the class coordinator with the necessary information prior to registering for the course; the course may be MDC, AEC, SEC, or VAC, but it must be relevant to the courses that are being offered.
 - The University shall ensure no overlap of SWAYAM-MOOC exams with that of the university mid-semester/internal exam and end-semester/external exam.
 - If a student attends an online session in self learning mode, will attain 1 credit after 30 hours of learning And he has to submit certificate of that courses.

The procedure for transferring credits from Online courses in the University are as follows:

- During the current semester, the candidate must submit an undertaking while filling exam form for credit transfer.
- The student is excluded from appearing in university exams for the exempted course(s) if they have the proper approval from the Controller of Examinations/Registrar/Dean/HOD of University
- The concerned department of the institution will intimate the exam section about the completion of a course along with the certificates of completion and the list of students, who have passed MOOCs in the current semester.
- On successful completion of each course, Student has to submit certificate to Head of the department/class coordinator for credit transfer
- If 4-credit courses is not available as per the student's choice, then the student can opt for 3 credit course and one credit can be acquired through continuous internal evaluation through mentor.
- The student who has qualified in the proctored examination conducted and applied for credittransfer as specified, is exempted from appearing in the CCE and SEE (for internal as well as external for the specified equivalent credit course only) conducted by the University.
- If the students opt for additional MOOCs above 40%, it will be considered as add-on credit and will be reflected on the marksheet or separate certificate but not be taken for tabulatingCGPA.

7. Evaluation Reforms

The evaluation process formulated to make a systematic evaluation of students' progress based on UGC guidelines. The evaluation consists of the following two components:

1. Continuous and Comprehensive Evaluation (CCE)- Formative
2. Semester End Evaluation (SEE)- Summative

CCE carries 50% of the total marks allotted to a subject and the other 50% being assigned to the SEE. The CCE and SEE exams must be passed by students.

Evaluation	4 credit subjects (Marks)	2 credit subjects (Marks)
CCE Evaluation (50%)	50	25
SEE Evaluation (50%)	50	25
Total	100	50

8. Continuous and Comprehensive Evaluation (CCE)

- Subject-wise CCE will be undertaken by the concerned faculty member.
- Normally CCE consists of class participation, case analysis and presentation, assignment, tutorials, slip tests (announced/ surprised), quizzes, attendance etc. or any combination of these.
- The students are expected to submit their answer scripts/ reports of internal evaluation within the stipulated time. Failure to do so may result in the script not being valued.
- Another part of CCE consists of mid-term written evaluation, which is compulsory for all students. It can be done in a scheduled manner. The duration of the mid-term evaluation shall be one hour. Passing marks for SEE Exam is as similar as CCE Exam.

CCE Evaluation	Total Marks	Passing Marks
Continuous and Comprehensive Evaluation (CCE) (3-0-1 Teaching Scheme)	30 Marks (Theory)	18
	20 Marks (Practical)	
Continuous and Comprehensive Evaluation (CCE) (4-0-0 Teaching Scheme)	50	18
Continuous and Comprehensive Evaluation (CCE) (3-1-0 Teaching Scheme)	50	18
Continuous and Comprehensive Evaluation (CCE) (2-0-0 Teaching Scheme)	25	9

Continuous and Comprehensive Evaluation (CCE) (for 3-0-1 Teaching Scheme)

No.	Evaluation Type (4 credit course)	Marks	Actual Marks
1	Mid Sem Exam (MSE)	30	15
2	Class Test	10 (Average of 3 tests of 10 marks each)	10
3	Quiz	10	
4	Active Learning (Group Discussion, Peer Learning, Presentation etc. up to Course Coordinator)	10	
5	Assignment	10 (Per Unit one assignment)	
6	Attendance	05	5
A. Total Marks (Theory)			30

No.	Evaluation Type (Practical)	Marks
1	Conduction of Practical	05
2	Regular Record Writing	05
3	Viva Voce	05
4	Understanding of Experiment	05
B. Total Marks (Practical)		20

Continuous and Comprehensive Evaluation (CCE) (for 4-0-0 Teaching Scheme)

No.	Evaluation Type (4 credit course)	Marks	Actual Marks
1	Mid Sem Exam (MSE)	30	30
2	Class Test	10 (Average of 3 tests of 20 Marks each)	15
3	Quiz	10	
4	Active Learning (Group Discussion, Peer Learning, Presentation etc. up to Course Coordinator)	10	
5	Assignment	10 (Per Unit one assignment)	
6	Attendance	05	5
Total Marks (Theory)			50

Continuous and Comprehensive Evaluation (CCE) (for 3-1-0 Teaching Scheme)

No.	Evaluation Type (4 credit course)	Marks	Actual Marks
1	Mid Sem Exam (MSE)	30	30
2	Class Test	10 (Average of 3 tests of 20 Marks each)	15
3	Quiz	10	
4	Active Learning (Group Discussion, Peer Learning, Presentation etc. up to Course Coordinator)	10	
5	Assignment	10 (Per Unit one assignment)	
6	Attendance	05	5
Total Marks (Theory)			50

Continuous and Comprehensive Evaluation (CCE) (for 2-0-0 Teaching Scheme)

No.	Evaluation Type (2 credit course)	Marks	Marks
1	Mid Sem Exam (MSE)	30	15
2	Quiz	10	5
3	Assignment	10 (per unit one assignment)	
4	Attendance	05	5
Total Marks			25

Note: In case of Absentee during MSE for Genuine reason, Special MSE will be arranged with the prior approval of HOD & Dean of respective Institute.

Attendance Criteria:

Sr. No.	Criteria	Marks
1	Less than 75	00
2	75-79	01
3	80-84	02
4	85-89	03
5	90-94	04
6	95-100	05

If student failed in CCE then following points to be considered

1. Student have to clear the failed subject in next semester
2. Student have to clear all CCE Components for failed subject/s (Except Attendance); Attendance of previous Semester will be counted

9. Semester End Evaluation (SEE)

- The SEE carries 50% of the marks assigned to a course. SEE shall be of 2 ½ hours for 4 credit course and 2 hours in case of 2 credit courses.
- Passing marks for SEE Exam is as similar as CCE Exam.
- The controller of the examination will conduct these examinations.
- Paper setting and evaluation will be done by the external examiners to an extent of 50% of the evaluation process. This examination shall be conducted as per a schedule that shall be notified in advance.
- The backlog exam will be conducted twice a year just after the result declared of the semester evaluation.
- Students shall have a second chance to clear their backlog and avoid the burden to carry forward the backlog with the next semester exam.

Appearance in all the evaluations is mandatory and no exemption can be granted except in the following case:

- In case of inability to attend the exam due to reasons considered genuine by the controller of examination in consultation with the Director/Board.
- In case of medical emergency, a certificate from the registered medical practitioner must be produced before the commencement of exams. The evaluation board will then take final decision on the recommendation for exemption.

Eligibility Criteria to appear in SEE

- To be able to appear for the SEE, a student must comply with the following conditions:
- Should have at least 75% of attendance in all the courses put together
- Should have at least 70% of attendance in each course/subject
- Should not have any disciplinary proceedings pending against him/her
- Should have no pending due

10. Question Paper Setting

Following procedure may be adopted to develop a question paper of a particular course:

- Specifying objective/learning outcome to be tested
- Decide the question format
- Pool of question from the expert
- Review of questions
- Pilot testing
- Assessment of difficulty of the questions
- Final selection of question from the pool of questions

Mid Sem Exam Question Paper Format (Credit 04 & Credit 02)

Questions	Sub-Question	Marks
Q.1	a	02
Q.1	b	03
Q.1	c	05
Q.2	a	05
Q.2	b	05
Or		
Q.2	b	05
Q.3	a	05
Q.3	b	05
Or		
Q.3	a	05
Q.3	b	05

Semester End Exam Question Paper Format:**(Credit 04)**

Each Section has 25 Marks

Questions	Sub-Question	Marks
Q.1	A	1
Q.1	B	2
Q.1	C	2
Or		
Q.2	A	02
Q.2	B	03
Q.2	C	05
Or		
Q.3	A	02
Q.3	B	03
Q.3	C	05
Or		
Q.4	A	02
Q.4	B	03
Q.4	C	05

(Credit 02)

Each Section has 12.5 Marks

Questions	Sub-Question	Marks
Q.1	a	0.5
Q.1	b	0.5
Q.1	c	0.5
Q.1	d	0.5
Q.1	e	0.5
Or		
Q.2	a	02
Q.2	b	03
Or		
Q.3	a	02
Q.3	b	03
Or		
Q.4	a	02
Q.4	b	03

These are Question paper formats for Section A. Paper setter will follow the same pattern for section B.

Malpractices and Punishment

All students are warned not to resort to any kind of malpractice during the evaluation. The examination department/board may take appropriate actions against the concerned student(s) who is/are found to indulge in any kind of malpractices activities during the evaluation process.

On-Demand Evaluation

On-Demand Examination may provide flexibility to students; especially those enrolled under open and distance education modes. This system works on the principle of flexibility where assessment can take place when the learner considers themselves ready to appear. Thus, readiness depends on the learner and not on the institutions. An advantage of this system may result in reduced number of failures in the examination.

Letter Grades and Grade Points

Letter Grade	Grade Point	Marks (%)
O (Outstanding)	10	97.0-100
A+ (Excellent)	9	87.0-96.9
A (Very Good)	8	77.0-86.9
B+ (Good)	7	67.0-76.9
B (Above Average)	6	57.0-66.9
C (Average)	5	47.0-56.9
P (Pass)	4	37.0-46.9
F (Fail)	0	Below 37.0
Ab (Absent)	0	Absent

11. Semester Grade Point Average (SGPA)

The SGPA is based on the grade of the current term of the programme of study.

Computation of SGPA

SGPA is computed from the grades as a measure of the student's performance in each semester. It is the ratio of the sum of the product of the number of credits with the grade points and the sum of the number of credits. i.e.

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

Where S_i is the SGPA for i^{th} course, C_i is the number of credits of the i^{th} course and G_i is the grade point scored by the student in the i^{th} course

12. Cumulative Grade Point Average (CGPA)

The CGPA is based on the grades in all the courses taken after joining the programme of study.

Computation of CGPA

The CGPA is the ratio of the sum of the products of total credits scored in a particular semester with the SGPA scored by the student in that semester and the sum of the total number of credits of each semester. i.e.

$$\text{CGPA} = \frac{\sum (C_i \times S_i)}{\sum C_i}$$

Where S_i is the SGPA of the i^{th} semester and C_i is the total number of credits in that semester.

13. Result Declaration

Declaration of results is a crucial element of the educational system of a higher educational institution on which rests its credibility and reputation. Timeliness is essential in case of both internal and external components of the evaluation. The following table shows a suggested timeline for CCE and SEE.

Continuous and Comprehensive Evaluation	
Daily Task	Before the next week
Weekly Task	Before the next task
Unit Test	Within one week
Semester End Evaluation	
Internal Components	7-10 working days
External Components	20-30 working days