UGC Interface Meeting 2024

National Education Policy 2020

Implementation

4th April 2024

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Vice Chancellor

Institute of Chemical Technology, Mumbai

Deemed to be University

NEP Implementation

Four – Year UG Engineering Curriculum

in

First Phase

with effect from

Academic Year 2023 – 24

Key Features under NEP 2020

Four Year Multidisciplinary Engineering Curriculum Framework

- Flexibility to move from one discipline of study to another - **Multi** and/or **Interdisciplinary** learning.
- Choose the **courses of interest** in **ALL** disciplines.
- **Multiple entry and exit options-** internships for Exits
- Flexibility to **move** from one institution to another
- Mandatory One Semester **Internship**/ On Job Training (OJT).
- Mandatory Vocational and Skill Enhancement Courses (**VSEC**)
- Mandatory Indian Knowledge System (**IKS**)
- Mandatory Community Engagement Project (**CEP**)/Field Project (FP)
- NSQF compliant **Skill-based Courses**
- Credits for *Co-curricular* and *Extra-Curricular* Activities
- **Ability Enhancement** Courses (AEC) (*one Modern Indian Language*)
- **Value Education** Courses (VEC) in Emerging areas of Engg/Technology.
- **Single and Double Minors, Research degree and Open Electives** (OE)

STEPS TAKEN ALREADY

Strategies and Implementation of NEP

- Formation of NEP Implementation Committee at Institute Level, under guidance of NEP Advisory Committee (Review Meetings are held every Thursday).
- Representation of All Departments, Section Heads and campuses in NEP Implementation Committee - Involvement of all stake-holders with responsibilities delegated.
- Consultative Meetings with Heads of Departments, Directors of campuses, Assistant Registrar of Academic Programs, Controller of Examination, IT department, and librarian for sensitization about requirement as per NEP guidelines.
- Sensitization of all faculty members for implementation of NEP guidelines by the HoD and departmental representatives on NEP Implementation Committee.
- Sensitization of FY Students for Multi-Disciplinary Minor (MDM) Degree Programmes - Several Orientation programs conducted for FY students at three campuses

STEPS TAKEN ALREADY

Strategies and Implementation of NEP

1. Restructuring of credits framework of all undergraduate Academic Programs as per framework suggested by State Government directives (Government of Maharashtra, GR, NEP-2022/(67/23)/2, Date July 4, 2023).
2. Identification of Minor degree course: Each department offers one Minor Degree open to all other departments of the University (**Total 13, including basic sciences, and emerging areas such as AI & ML, Material Science and Management**)
3. Preparation of Syllabi of all Major and Minor Degree Programmes offered at all three campuses and made available at Institute's website *before* academic year began in 2023.
4. Identification of basic and useful skills required in candidates at the intermediate exit points, after Sem-II, Sem-IV and Sem-VI.
5. **IKS (Indian Technology), CCA (Sports, NSS, Yoga, Fine Arts), Open electives (OEs), VEC and VSEC** introduced in Sem-I-IV of all programmes.
6. **E-Samarth ERP** adopted for implementation of NEP guidelines.
7. Faculty Development program in new pedagogy are in progress across all campuses.
8. **Academic Credits Bank** - uploading of data in progress, credit transfer policy in place.

GR PRESCRIBED

Course Structure Proposed by Government of Maharashtra

Semester		I	II	III	IV	V	VI	VII	VIII	Total Credits
Basic Science Course	BSC/ESC	8-10	6-8		--	--	--	--	--	14-18
Engineering Science Course		8-10	4-6		--	--	--	--	--	12-16
Programme Core Course	PCC	--	2	8-10	8-10	10-12	8-10	4-6	4-6	44-56
Programme Elective Course	PEC	--	--	--	--	4	8	2	6	20
Multidisciplinary Minor	MDM		-	2	2	4	2	2	2	14
Open Electives	OE	--	--	4	2	2	--	--	--	8
Vocational and Skill Enhancement Course	VSEC	2	2	--	2	--	2	--	--	8
Ability Enhancement Course	AEC	2	--	--	2	--	--	--	--	4
Humanities, Social Science, and Management Entrepreneurship/ Economics/ Management Courses	HSSM	--		2	2	--	--	--	--	4
Indian Knowledge System	IKS		2		--	--	--	--	--	2
Value Education Course	VEC	--	--	2	2	--	--	--	--	4
Research Methodology	RM	--	--	--	--	--	--		4	4
Community /Field Project	CEP / FP	--	--	2	--	--	--	-	-	2
Design Project	DP	--	--	--	--	--	--		4	4
Internship	OJT	--	---			--	--	12	-	12
Co-curricular Liberal Courses	CC	2	2		--	--	--	--	-	4
Total Credits (Major)		20-22	20-22	20-22	20-22	20-22	20-22	20-22	20-22	160-176

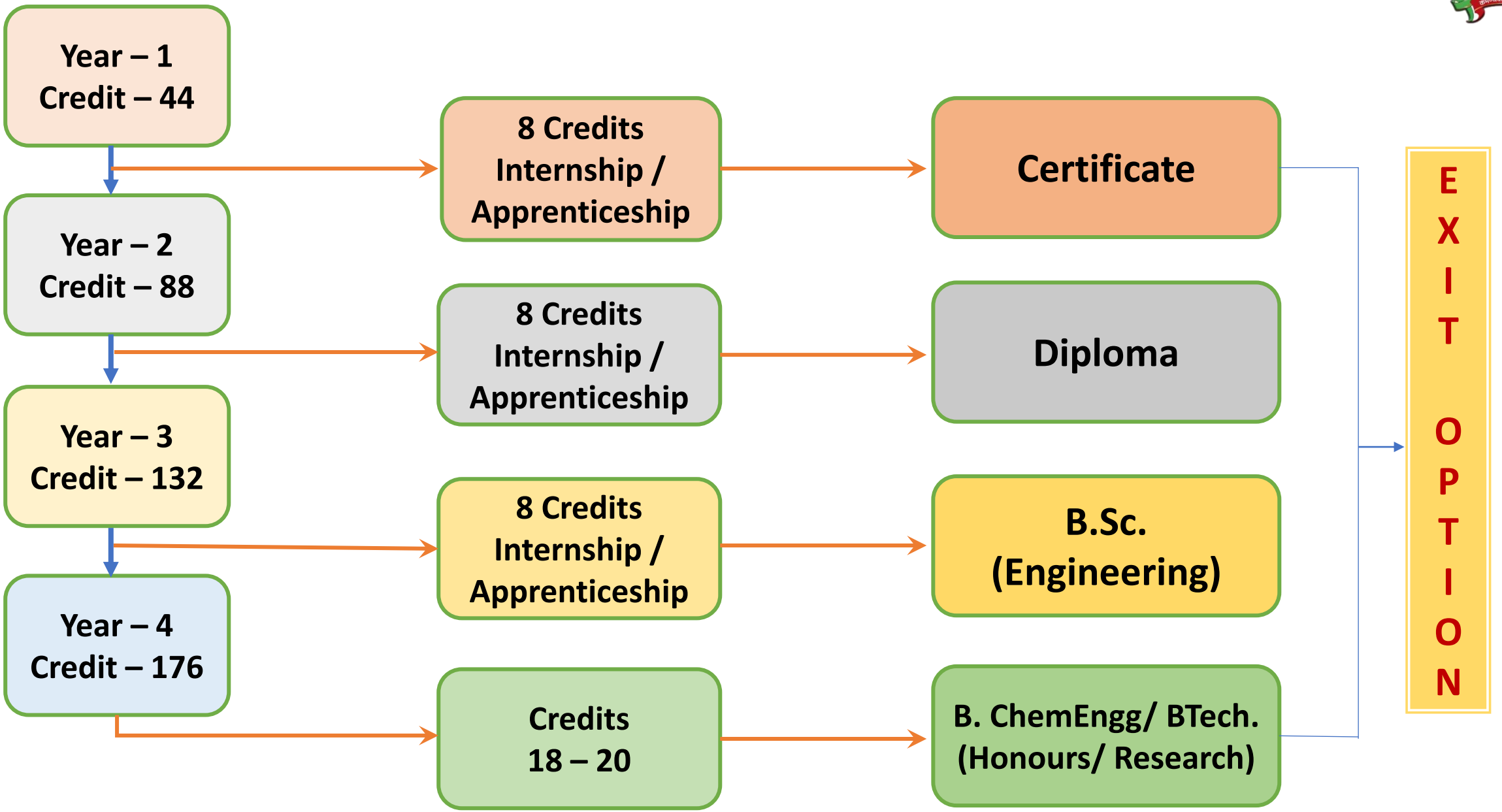
ACADEMIC COUNCIL APPROVED

Implementation of NEP

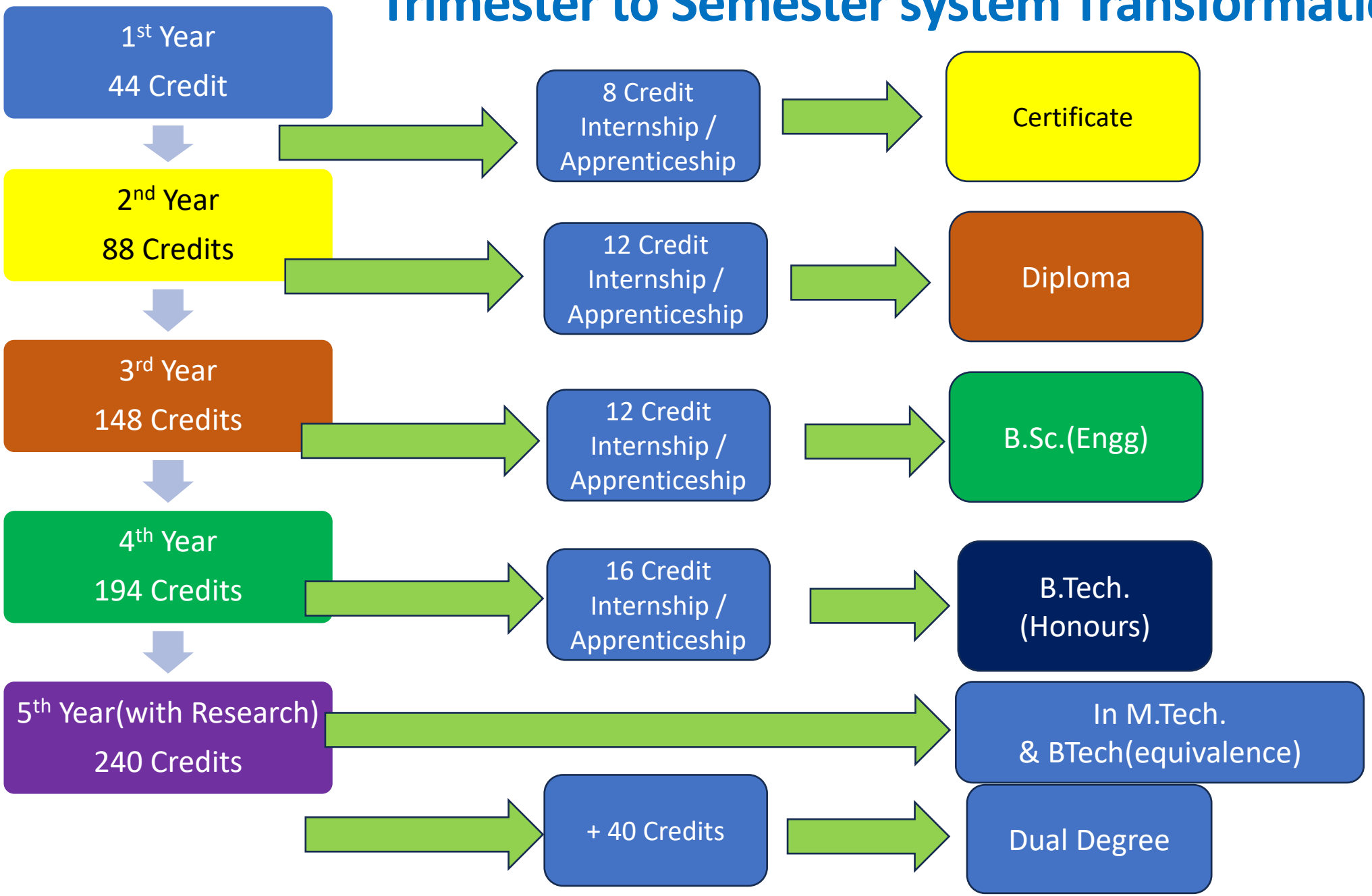
Levels	Qualification / Title	Credits	Credits	Semester	Year
		Minimum	Maximum		
4.5	One Year UG **Certificate** in Engg./ Tech. (exit after Sem-II)	40	44	2	**1**
5	Two Years UG **Diploma** in Engg./ Tech. (Exit after Sem-IV)	80	88	4	**2**
5.5	Three Years Bachelor's Degree	120	132	6	**3**
	in Vocation (**B. Voc.**) or **B. Sc.** (Engg./ Tech.) (Exit after S-VI)				
6	4-Years Bachelor's degree (**B.E./ B.Tech.** or Equivalent) in Engg./ Tech. with a **Multidisciplinary Minor degree**	160	176	8	**4**
6	4-Years Bachelor's degree (**B.E./ B.Tech.** or Equivalent) in Engg./ Tech.- **Honors with Multidisciplinary Minor degree**	180	194	8	**4**
6	4 Years- Bachelor's Engg./ Tech. **Honours with Research** Degree in chosen Major Engg./ Tech. Discipline with	180	194	8	**4**
	Multidisciplinary Minor degree				
6	4-Years Bachelor's degree (B.E./ B.Tech. or equivalent) in Engg./ Tech.- Major Engg. Discipline with **Double Minors** (Multidisciplinary and Specialization Minors)	180	194	8	**4**
7	5- Year Integrated MTech with **Research Degree** in Major Engg. Discipline with **Multidisciplinary Minor degree**	220	234	10	**5**

Implementation of NEP

PROGRAMME STRUCTURE



Trimester to Semester system Transformation



CREDIT DISTRIBUTION

4 Years Engg./Tech. Degree Programmes

	Major (Core) Subject comprising Mandatory and Elective Courses	88 Credits (50%)
1	Compulsory Multidisciplinary Minor Subject	14 credits (8%)
2	Generic/ Open Elective Courses (OE)	08 credits (4.5%)
3	Vocational and Skill Enhancement Courses (VSEC)	08 credits (4.5%)
4	Ability Enhancement Courses (AEC),	10 credits (5.7%)
	Indian Knowledge System (IKS)	
	Value Education Courses (VEC)	
5	Internship/Apprenticeship corresponding to the Major (Core) Subject	12 credits (6.8%)
6	Field Projects/Community Engagement Projects	2 credits (1.1%)
7	Co-curricular Courses (CC)	4 credits (2.25%)
8	Honours / Research/ Double Minor	18 - 20 Credits

Up to 40% of the total courses being offered in a particular programme in a semester can be through the **Online Learning Courses** offered through the **SWAYAM** platform

MDM Degree

Multi-Disciplinary Minor Degree
Basket of Options

Serial No.	Multidisciplinary Minor Degree in	Department
1	Chemical Sciences	Chemistry
2	Machine Learning and Artificial Intelligence	Mathematics
3	Biotechnology and Bioengineering	Biological Sciences and Biotechnology
4	Pharmaceutical Chemistry & Technology	Pharmaceutical Sciences and Technology
5	Fibres and Textile Processing Technology	Fibres and Textile Processing Technology
6	Food Science and Technology	Food Engineering and Technology
7	Mechanical Engineering	General Engineering
8	Management	Humanities and Management Sciences
9	Materials Science	Physics
10	Polymer Engineering and Technology	Polymer and Surface Engineering
11	Dystuff Technology	Speciality Chemicals Technology
12	Oils Oleochemicals and Surfactants Technology	Oils Oleochemicals and Surfactants Technology
13	Surface Coating Technology	Polymer and Surface Engineering

MDM Degree

Jalna and Bhubhaneswar Campus

Jalna Campus		Bhubhaneswar Campus	
Sr. No.	**MDM Program**	**Sr. No.**	**MDM Program**
1	Food Technology	1	Food Technology
2	Pharma Technology	2	Pharmaceutical Chemistry & Technology
3	Lipids Technology	3	Petroleum and Petrochemicals Technology
4	Materials and Polymers Technology	4	Fibres and Textile Processing Technology
5	Energy Technology	5	Materials and Polymers Technology
6	Petro Technology	6	Energy Technology
7	Chemical Sciences		
8	Physical Sciences		

Four Master's Programme
Government of Maharashtra Guidelines

- M.Sc. Engineering Mathematics
- M.Sc. Chemistry
- M.Sc. Physics (Materials Science)
- M.Sc. Textile Chemistry

- **On Job Training (OJT) (4 Credits)**
  - Implemented during for 8 – 10 weeks (between SEM – II and SEM – III)
  - Industry exposure to the students and evaluation by experts from both industry and academia
- **Exit Option** after one year with a "**PG Diploma**" degree
- **Student's Choice Based Open Electives**
  - A basket of electives of 26 courses are available from the Department
  - Student can also choose **Open Electives** from the Swayam portal after approval.
  - Depending on interest of the students, new electives can also be offered
- **Strong Research component and practical applications**
  - Compulsory Research Methodology Courses (4 Credit) (SEM – I)
  - Two research projects (SEM – III and SEM – IV)

Engineering Mathematics

Sample Syllabus

Mathematics and Applications	SEM – I	SEM – II	SEM – III	SEM – IV
Foundation Courses in Mathematics	Applied Linear Algebra, Real and Complex Analysis	Differential Equations, Modern Algebra	Measure, Integration and Functional Analysis, Optimization Techniques	Advanced Differential Equations, Mathematical Modelling
Data Science	Statistical Computing	Machine Learning	Deep Learning and AI	Advanced Statistical Computing
Computation & Programming	Computational Mathematics Lab – I	Computational Mathematics Lab – II	Computational Mathematics Lab – III	
Research and Development	Research Methodology		Research Project – I	Research Project – II
Industry Exposure		**On Job Training (OJT)**		
Student's Choice	Elective – I*	Elective – II*	Elective – III*	Elective – IV*

The syllabus is designed as per the guidelines provided by the Government of Maharashtra GR dated 16th May 2023

- Dynamic & Imaginative Syllabus
- Highly Science based courses & Pedagogy
- Credit based courses
- Rigorous Continuous Assessment
- Well-equipped laboratory
- Soft Skills development
- Inclusive Admissions and Financial Support

- Interdisciplinary Relevant Research
- Excellent Facilities
- Frontier areas of research
- Incubation Centre & Startup Policy
- Creative Combinations
- Research Collaborations

- Mandatory Industry Internship
- Industry Relations
- Projects and Consultations
- Alumni Relations
- Community linked projects

- Motivated and competent faculty
- Academic Freedom
- Access to latest tools in technology
- Best Library facilities
- Active participation

Our Mission


Startups/ Businesses across chemical Industry
National and International Linkages
Students with excellent Cognitive skills
ICT
Chemical and allied Industry and Alumni Support
Innovations in industrial Practices
Highest number of publications and patents per faculty

Questions and Answers

Thank You

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