Tulsiramji Gaikwad-Patil College of Engineering and Technology
Wardha Road, Nagpur-441 108
NAAC A+ Accredited
Approved by AICTE, New Delhi, Govt. of Maharashtra
(An Autonomous Institute Affiliated to RTM Nagpur University,

Department of Civil Engineering

DEPARTMENT OF CIVIL ENGINEERING

M.Tech (Structural Engineering)

Structure & Curriculum

From

Academic Year 2021-22

Vision of Institute

"To emerge as a learning Center of Excellence in the National Ethos in domains of Science, Technology and Management"

Mission of Institute

[M1] To strive for rearing standard and stature of the students by practicing high standards of Professional ethics, transparency and accountability.

[M2] To provide facilities and services to meet the challenges of Industry and Society.

[M3] To facilitate socially responsive research, innovation and entrepreneurship.

[M4] To ascertain holistic development of student and staff members by inculcating knowledge and profession as work practices.

Vision of the Department

To enhance and empower the capability of youth in education, research and entrepreneurship, capable of offering the innovative solution to the challenges faced in the Civil Engineering domain

Mission of the Department

- To develop capable civil engineering graduates by imparting quality education and training.
- To nurture youth to face challenges and offer solutions in the research domain of civil engineering.
- To promote overall development of the students by enhancing their skills to become self-sufficient by offering industrial exposure.
- To develop leadership skills and engage in the process of lifelong learning.
- To create infrastructure and human services in a sustainable way, to achieve social and environmental needs.

Program Education Objectives (PEO)

- The graduates will be able to apply principles of advanced Mathematics and Engineering sciences to analyze and solve civil engineering problems.
- Create sustainable environment to plan infrastructure for social needs.
- Design and execute civil engineering projects.
- Develop as a leader and to inculcate team spirit to execute ethically the projects.
- Adopt emerging technologies for lifelong learning.

Program Outcomes (PO)

PO1: An ability to independently carry out research /investigation and development work to solve practical problems.

PO2: An ability to write and present a substantial technical report/document.

PO3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program

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Scheme of Instructions

Scheme of Instructions for First Year M. Tech. Programme in Structural Engineering

Semester – I (w.e.f.: AY 2021-22)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs / week	Credits	Exam Scheme				
									CT - 1	CT - 2	TA / CA	ESE	TOTAL
1.	PCC	MSE1101	Theory of Elasticity and Plasticity	3	1	-	4	4	15	15	10	60	100
2.	PCC	MSE1102	Structural Dynamics	3	-	-	3	3	15	15	10	60	100
3.	PEC	MSE1103-06	Professional Elective - I	3	-	-	3	3	15	15	10	60	100
4.	PEC	MSE1107-10	Professional Elective - II	3	-	-	3	3	15	15	10	60	100
5.	PCC	MSE1111	Matrix Analysis of Structures	3	-	-	3	3	15	15	10	60	100
6.	PCC	MSE1112	Structural Dynamics Lab	-	-	2	2	1	-	-	25	25	50
7.	PCC	MSE1113	Matrix Analysis of Structures Lab			2	2	1	-	-	25	25	50
8.	MCC	MAU1101	Pedagogy Studies	2	-	-	2	Audit	-	-	-	-	-
			Total	**17**	**1**	**4**	**22**	**18**	**75**	**75**	**100**	**350**	**600**

L- Lecture T-Tutorial P-Practical CT1- Class Test 1 CT2- Class Test 2 TA/CA- Teacher Assessment / Continuous Assessment

ESE- End Semester Examination (For Laboratory: End Semester Performance)

*- Professional Elective / Audit Course / Open Elective (list is provided at the end of structure)

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Scheme of Instructions

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Semester – II (w.e.f.: AY 2021-22)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs / week	Credits	Exam Scheme				
									CT - 1	CT - 2	TA / CA	ESE	TOTAL
1.	PCC	MSE1201	Finite Element Analysis	3	1	-	4	4	15	15	10	60	100
2.	PCC	MSE1202	Theory of Plates & Shell	3	1	-	4	4	15	15	10	60	100
3.	PEC	MSE1203-06	Professional Elective - III	3	-	-	3	3	15	15	10	60	100
4.	PEC	MSE1207-10	Professional Elective – IV	3	-	-	3	3	15	15	10	60	100
5.	PCC	MSE1211	Advanced R.C.C. Lab	-	-	2	2	1	-	-	25	25	50
6.	PCC	MSE1212	Advanced Steel Lab	-	-	2	2	1	-	-	25	25	50
7.	FC	MSE1213	Research Methodology#	2	-	-	2	2	-	-	25	25	50
8.	MCC	MAU1202	Research Paper Writing	2	-	-	2	Audit	-	-	-	-	-
			Total	16	2	04	22	18	60	60	115	315	550

L- Lecture T-Tutorial P-Practical CT1- Class Test 1 CT2- Class Test 2 TA/CA- Teacher Assessment / Continuous Assessment

ESE- End Semester Examination (For Laboratory: End Semester Performance)

*- Professional Elective / Audit Course / Open Elective (list is provided at the end of structure)

Students are expected to complete it online by appearing NPTEL/Swayam Certification for 03 credits. Weekly 02 Hrs Theory in which students are expected to work on mathematical modeling, Seminar on IPR, Patent filing, Removing Plagiarisms, etc. will be done.

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Scheme of Instructions

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Semester – III (w.e.f.: AY 2021-22)

Sr. No.	Course Category	CourseCode	Course Title	L	T	P	Contact Hrs / week	Credits	Exam Scheme				
									CT - 1	CT - 2	TA / CA	ESE	TOTAL
1	PROJ	MSE2301	Dissertation Phase-I	-	-	20	20	10	-	-	100	100	200
2	PEC	MSE2302	MOOC course (8-12)$	-	-	-	-	3	-	-	-	-	-
3	OEC	M$$XX03-06	Open Elective -I	3	-	-	3	3	15	15	10	60	100
			Total	3	-	20	23	16	15	15	110	160	300

Note:

1. MSE2302 will be decided by respective Guide in Consultation with Program Coordinator. Course is mandatory for student and his dissertation phase I will be considered incomplete without this Mandatory MOOC Course.

2. In Case, the course offered online are not completely relevant with the topic of dissertation then any course suggested by NASSCOM on recent technologies can be opted by candidate.

3. $ Programme coordinator will provide list of 03 MOOC courses of minimum 08 weeks duration (as per availability). Students are expected to complete any one out of three courses in order to get the required credits.

L- Lecture T-Tutorial P-Practical
CT1- Class Test 1 TA/CA- Teacher Assessment/Continuous Assessment
CT2- Class Test 2 ESE- End Semester Examination (For Laboratory End Semester performance)

PROGRESSIVE TOTAL CREDITS= 36+16 = **52**

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Scheme of Instructions

Scheme of Instructions for Second Year M. Tech. Programme in Structural Engineering

Semester – IV (w.e.f.: AY 2021-22)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs / week	Credits	Exam Scheme				
									CT - 1	CT - 2	TA / CA	ESE	TOTAL
1.	PROJ	MSE2401	Dissertation Phase- II	-	-	32	32	16	-	-	100	200	300
			Total	-	-	32	32	16	-	-	100	200	300

TA/CA- Teacher Assessment / Continuous Assessment

ESE- End Semester Examination (For Laboratory: End Semester Performance)

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Scheme of Instructions

Scheme of Instructions for First Year/Second Year M. Tech. Programme in Structural Engineering

List of Professional Elective Courses

Semester - I			Semester-II	
Professional Elective - I	**Professional Elective - II**		**Professional Elective- III**	**Professional Elective - IV**
Theory of Structural Stability	Advanced Design of Steel Structures		Advances in Concrete Technology	Design of Advanced Concrete Structures
Theory of Thin Plates and Shells	Design of Composite Construction		Design of Formwork	Advanced Design of Foundations
Structural Optimization	Structural Health Monitoring and Rehabilitations of Structures		Design of High-Rise Structures	Soil Structure Interaction
Design of Environmental Structures	Design of Earthquake Resistant Structures		Earth Retaining Structures	Design of Industrial Structure

List of Open Electives

Semester - I
Open Electives
MCSXX01: Business Analytics
MIPXX05: Industrial Safety
MMBXX06: Operation Research
MSEXX02: Cost Management of Engineering Projects
MSEXX03: Composite Materials
MIPXX04: Waste to Energy

28.12.22
Prof. Aasif M Baig
HoD, Civil Engineering
H.O.D.
Department of Civil Engineering
T.G.P.C.E.T.Nagpur.

29/12
Prof. Anup Gade
Dean Academics
Dean Academics
Tulsiramji Gaikwad-Patil College Of Engineering and Technology, Nagpur

29/12/22
Dr. Anil Kale
Prinicpal
Principal
Tulsiramji Gaikwad Patil College Of Engineering and Technology, Nagpur