ANNA UNIVERSITY, CHENNAI
NON-AUTONOMOUS AFFILIATED COLLEGES

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M. E. STRUCTURAL ENGINEERING

REGULATIONS 2021
CHOICE BASED CREDIT SYSTEM
</div>

1. PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

Graduates of the Programme M E Structural Engineering will

PEO1 Gain knowledge and skills in structural engineering which will enable them to have a career and professional accomplishment in the public or private sector organizations

PEO2 Become consultants in Structural Engineering and solve complex real-life issues related to the analysis, design and maintenance of structures under various environmental conditions.

PEO3 Contribute to the enhancement of knowledge in Structural Engineering by performing quality research in institutions of international repute or Research organizations or Academia.

PEO4 Practice their profession with good communication, leadership, ethics and social responsibility and formulate solutions that are technically sound, economically feasible, and socially acceptable.

PEO5 Graduates will function in multi-disciplinary teams and adapt to evolving technologies through life-long learning and innovation

2. PROGRAMME OUTCOMES (POs):

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's program

3. PROGRAM SPECIFIC OUTCOMES (PSOs):

Graduates of the program M.E. Structural Engineering will be able to
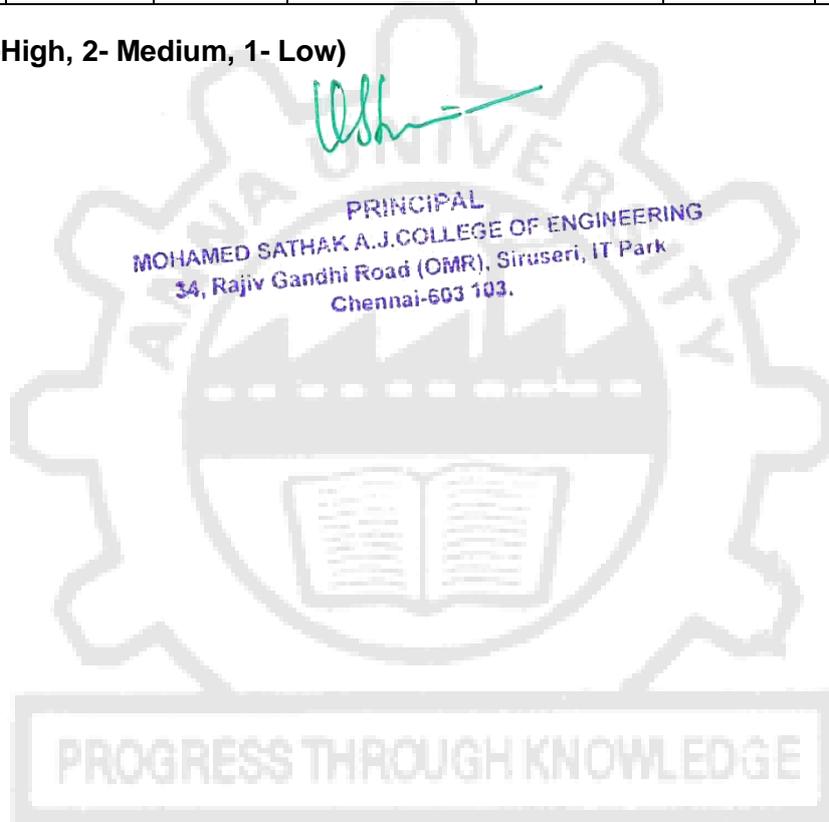
PSO1	Knowledge of Structural Engineering discipline	Acquire in-depth knowledge of the Structural Engineering discipline, with an ability to evaluate, analyze and synthesize existing and new knowledge in structural design.
PSO2	Critical analysis of Structural Engineering issues and innovation	Critically analyze complex Structural Engineering problems, apply independent judgment for synthesizing information and make innovative advances in a theoretical, practical and policy context.
PSO3	Conceptualization and evaluation of Engineering solutions to Structural Design issues	Conceptualize and solve Structural Engineering problems, evaluate potential solutions and arrive at technically feasible, economically viable and environmentally sound solutions with due consideration of health, safety, and socio-cultural factors

4. PEO/PO Mapping:

PEO	PO			PSO		
	PO1	PO2	PO3	PSO1	PSO2	PSO3
I.	-	2	3	3	3	3
II.	1	3	3	3	2	1
III.	3	3	2	2	3	3
IV.	1	1	-	-	1	3
V.	2	-	1	1	3	-

(3-High, 2- Medium, 1- Low)

PRINCIPAL
MOHAMED SATHAK A.J.COLLEGE OF ENGINEERING
34, Rajiv Gandhi Road (OMR), Siruseri, IT Park
Chennai-603 103.

MAPPING OF COURSE OUTCOMES AND PROGRAMME OUTCOMES

		COURSE NAME	PO1	PO2	PO3	PSO1	PSO2	PSO3
YEAR I	SEMESTER I	Advanced Mathematical Methods	1.8	0.8	3	-	-	-
		Theory of Elasticity and Plasticity	3	2.4	2.4	3	2.4	2.2
		Structural Dynamics and Earthquake Engineering	3	2.20	2.25	3	2.75	1.80
		Professional Elective I	-	-	-	-	-	-
		Research Methodology and IPR	-	-	-	-	-	-
		Audit Course I	-	-	-	-	-	-
		Advanced Construction Engineering and Experimental Techniques Laboratory	2.8	0.8	1.4	2.6	1.8	2
		Technical Seminar	2.6	1.2	1.8	2.8	1.2	2.2
	SEMESTER II	Advanced Steel Structures	3	2.2	2.4	3	2.6	2.6
		Advanced Concrete Structures	3	2	2	2.6	2.4	2
		Finite Element Analysis in Structural Engineering	3	2.4	2.75	2	2.6	2
		Professional Elective II	-	-	-	-	-	-
		Professional Elective III	-	-	-	-	-	-
		Audit Course II	-	-	-	-	-	-
		Numerical and Finite Element Analysis Laboratory	3	1.8	2.6	2.4	3	2.6
		Structural Design Studio Laboratory	2.8	1.4	2.2	2.6	2.4	2.2
YEAR II	SEMESTER III	Professional Elective IV	-	-	-	-	-	-
		Professional Elective V	-	-	-	-	-	-
		Open Elective	-	-	-	-	-	-
		Practical Training (4 weeks)	2.8	1.2	1.8	2.4	2.2	2.4
		Project Work I	2.4	1.2	2	2.2	1.8	1.8
	SEMESTER IV	Project Work II	2	2.6	2.4	2	2	1.6
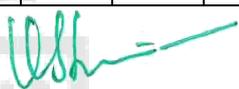
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PROFESSIONAL ELECTIVE COURSES [PEC]

S. NO.	COURSE TITLE	PO1	PO2	PO3	PSO1	PSO2	PSO3
1.	Non-linear Analysis of Structures	2	2.20	3	2	2.20	1.60
2.	Structural Stability	3	2	3	2.60	2	2.20
3.	Wind and Cyclone Effect on Structures	3	1.75	3	2	1.80	2.20
4.	Prefabricated Structures	2.60	1.60	2.60	2.80	2.60	2.60
5.	Advanced Concrete Technology	3	1.50	1.33	2.40	1.50	1.80
6.	Advanced Prestressed Concrete	2.4	1.80	2.40	1.80	2	1.80
7.	Reliability Analysis of Structures	2.40	1.75	1.75	1.60	2.20	2.20
8.	Design of Formwork	2.80	1.67	2.33	2	3	2
9	Maintenance, Repair and Rehabilitation of Structures	3	1.33	1.67	2.40	2.20	1.40
10.	Mechanics of Fiber Reinforced Polymer Composite Materials	2.8	2.33	1.75	2.20	2.20	1.80
11.	Design of Steel-Concrete Composite Structures	2.60	2	1.67	2.40	2	1.40
12.	Design of Masonry Structures	3	2	2	2.60	2	2.40
13.	Design of Industrial Structures	3	2	2	2.60	2.60	2.60
14.	Advanced Design of Foundation Structures	3	2.2	2	2.60	2.60	2.20
15.	Optimization of Structures	3	2.50	2.20	2.40	2.40	2.20
16.	Structural Health Monitoring	2.40	2	3	2.40	2	2
17.	Design of Offshore Structures	3	1.75	2	2.60	1.60	1.60
18.	Performance of Structures with Soil-Structure Interaction	3	2	2.50	2.60	2.40	2.40
19.	Design of Bridge Structures	3	2	2	2.20	2.60	2.60
20.	Design of Shell and Spatial Structures	2.60	2.25	2.33	2.20	2.20	2
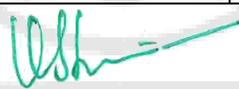
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NON-AUTONOMOUS AFFILIATED COLLEGES
M. E. STRUCTURAL ENGINEERING
REGULATIONS 2021
CHOICE BASED CREDIT SYSTEM
I TO IV SEMESTERS CURRICULA AND SYLLABUS
SEMESTER I

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	MA4153	Advanced Mathematical Methods	FC	4	0	0	4	4
2.	ST4101	Theory of Elasticity and Plasticity	PCC	3	1	0	4	4
3.	ST4102	Structural Dynamics and Earthquake Engineering	PCC	3	1	0	4	4
4.	RM4151	Research Methodology and IPR	RMC	2	0	0	2	2
5.		Professional Elective I	PEC	3	0	0	3	3
6.		Audit Course I*	AC	2	0	0	2	0
PRACTICALS								
7.	ST4161	Advanced Construction Engineering and Experimental Techniques Laboratory	PCC	0	0	4	4	2
8.	ST4111	Technical Seminar	EEC	0	0	2	2	1
			TOTAL	17	2	6	25	20

* Audit Course is optional

SEMESTER II

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	ST4201	Advanced Steel Structures	PCC	3	1	0	4	4
2.	ST4202	Advanced Concrete Structures	PCC	3	1	0	4	4
3.	ST4203	Finite Element Analysis in Structural Engineering	PCC	3	0	0	3	3
4.		Professional Elective II	PEC	3	0	0	3	3
5.		Professional Elective III	PEC	3	0	0	3	3
6.		Audit Course II*	AC	2	0	0	2	0
PRACTICALS								
7.	ST4211	Numerical and Finite Element Analysis Laboratory	PCC	0	0	4	4	2
8.	ST4212	Structural Design Studio	PCC	0	0	4	4	2
			TOTAL	17	2	8	27	21

* Audit Course is optional

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Professional Elective IV	PEC	3	0	0	3	3
2.		Professional Elective V	PEC	3	0	0	3	3
3.		Open Elective	OEC	3	0	0	3	3
PRACTICALS								
4.	ST4311	Practical Training (4 Weeks)	EEC	0	0	0	0	2
5.	ST4312	Project Work I	EEC	0	0	12	12	6
			TOTAL	**9**	**0**	**12**	**21**	**17**

SEMESTER IV

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
PRACTICALS								
1.	ST4411	Project Work II	EEC	0	0	24	24	12
			TOTAL	**0**	**0**	**24**	**24**	**12**

TOTAL NO. OF CREDITS: 70

FOUNDATION COURSES (FC)

S. NO	COURSE CODE	COURSE TITLE	PERIODS PER WEEK			CREDITS	SEMESTER
			Lecture	Tutorial	Practical		
1.	MA4153	Advanced Mathematical Methods	4	0	0	4	1

PROFESSIONAL CORE COURSES (PCC)

S. NO	COURSE CODE	COURSE TITLE	PERIODS PER WEEK			CREDITS	SEMESTER
			Lecture	Tutorial	Practical		
1.	ST4101	Theory of Elasticity and Plasticity	3	1	0	4	1
2.	ST4102	Structural Dynamics and Earthquake Engineering	3	1	0	4	1
3.	ST4161	Advanced Construction Engineering and Experimental Techniques Laboratory	0	0	4	2	1
4.	ST4201	Advanced Steel Structures	3	1	0	4	2
5.	ST4202	Advanced Concrete Structures	3	1	0	4	2
6.	ST4203	Finite Element Analysis in Structural Engineering	3	0	0	3	2
7.	ST4211	Numerical and Finite Element Analysis Laboratory	0	0	4	2	2
8.	ST4212	Structural Design Studio	0	0	4	2	2
				TOTAL CREDITS		**25**	

LIST OF PROFESSIONAL ELECTIVE COURSES [PEC]

SEMESTER I, ELECTIVE I

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	ST4001	Non-linear Analysis of Structures	PEC	3	0	0	3	3
2.	ST4002	Structural Stability	PEC	3	0	0	3	3
3.	ST4003	Wind and Cyclone Effects on Structures	PEC	3	0	0	3	3
4.	ST4004	Prefabricated Structures	PEC	3	0	0	3	3

SEMESTER II, ELECTIVE II

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	CN4071	Advanced Concrete Technology	PEC	3	0	0	3	3
2.	ST4071	Advanced Prestressed Concrete	PEC	3	0	0	3	3
3.	ST4005	Reliability Analysis of Structures	PEC	3	0	0	3	3
4.	ST4006	Design of Formwork	PEC	3	0	0	3	3

SEMESTER II, ELECTIVE III

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	ST4073	Maintenance, Repair and Rehabilitation of Structures	PEC	3	0	0	3	3
2.	ST4007	Mechanics of Fiber Reinforced Polymer Composite Materials	PEC	3	0	0	3	3
3.	ST4008	Design of Steel-Concrete Composite Structures	PEC	3	0	0	3	3
4.	ST4009	Design of Masonry Structures	PEC	3	0	0	3	3

SEMESTER III, ELECTIVE IV

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	ST4010	Design of Industrial Structures	PEC	3	0	0	3	3
2.	ST4011	Advanced Design of Foundation Structures	PEC	3	0	0	3	3
3.	ST4012	Optimization of Structures	PEC	3	0	0	3	3
4.	ST4013	Structural Health Monitoring	PEC	3	0	0	3	3

SEMESTER III, ELCTIVE V

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	L	T	P	TOTAL CONTACT PERIODS	CREDITS
				PERIODS PER WEEK				
1.	ST4014	Design of Offshore Structures	PEC	3	0	0	3	3
2.	ST4015	Performance of Structures with Soil-Structure Interaction	PEC	3	0	0	3	3
3.	ST4091	Design of Bridge Structures	PEC	3	0	0	3	3
4.	ST4016	Design of Shell and Spatial Structures	PEC	3	0	0	3	3

RESEARCH METHODOLOGY AND IPR COURSES (RMC)

S. NO	COURSE CODE	COURSE TITLE	Lecture	Tutorial	Practical	CREDITS	SEMESTER
			PERIODS PER WEEK				
1.	RM4151	Research Methodology and IPR	2	0	0	2	1
					TOTAL CREDITS	2	

EMPLOYABILITY ENHANCEMENT COURSES (EEC)

S. NO	COURSE CODE	COURSE TITLE	Lecture	Tutorial	Practical	CREDITS	SEMESTER
			PERIODS PER WEEK				
1.	ST4111	Technical Seminar	0	0	2	1	1
2.	ST4311	Practical Training (4 Weeks)	0	0	0	2	3
3.	ST4312	Project Work I	0	0	12	6	3
4.	ST4411	Project Work II	0	0	24	12	4
				TOTAL CREDITS		21	

AUDIT COURSES (AC)

Registration for any of these courses is optional for students

SL. NO	COURSE CODE	COURSE TITLE	Lecture	Tutorial	Practical	CREDITS	SEMESTER
			PERIODS PER WEEK				
1.	AX4091	English for Research Paper Writing	2	0	0	0	
2.	AX4092	Disaster Management	2	0	0	0	1/2
3.	AX4093	Constitution of India	2	0	0	0	
4.	AX4094	நற்றமிழ் இலக்கியம்	2	0	0	0	
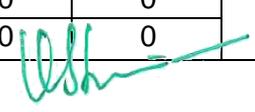
LIST OF OPEN ELECTIVES FOR PG PROGRAMMES

SL. NO.	COURSE CODE	COURSE TITLE	PERIODS PER WEEK			CREDITS
			L	T	P	
1.	OIC431	Blockchain Technologies	3	0	0	3
2.	OIC432	Deep Learning	3	0	0	3
3.	OME431	Vibration and Noise Control Strategies	3	0	0	3
4.	OME432	Energy Conservation and Management in Domestic Sectors	3	0	0	3
5.	OME433	Additive Manufacturing	3	0	0	3
6.	OME434	Electric Vehicle Technology	3	0	0	3
7.	OME435	New Product Development	3	0	0	3
8.	OBA431	Sustainable Management	3	0	0	3
9.	OBA432	Micro and Small Business Management	3	0	0	3
10.	OBA433	Intellectual Property Rights	3	0	0	3
11.	OBA434	Ethical Management	3	0	0	3
12.	ET4251	IoT for Smart Systems	3	0	0	3
13.	ET4072	Machine Learning and Deep Learning	3	0	0	3
14.	PX4012	Renewable Energy Technology	3	0	0	3
15.	PS4093	Smart Grid	3	0	0	3
16.	CP4391	Security Practices	3	0	0	3
17.	MP4251	Cloud Computing Technologies	3	0	0	3
18.	IF4072	Design Thinking	3	0	0	3
19.	MU4153	Principles of Multimedia	3	0	0	3
20.	DS4015	Big Data Analytics	3	0	0	3
21.	NC4201	Internet of Things and Cloud	3	0	0	3
22.	MX4073	Medical Robotics	3	0	0	3
23.	VE4202	Embedded Automation	3	0	0	3
24.	CX4016	Environmental Sustainability	3	0	0	3
25.	TX4092	Textile Reinforced Composites	3	0	0	3
26.	NT4002	Nanocomposite Materials	3	0	0	3
27.	BY4016	IPR, Biosafety and Entrepreneurship	3	0	0	3

SUMMARY

Sl. No.	Name of the Programme: M.E STRUCTURAL ENGINEERING					
	SUBJECT AREA	CREDITS PER SEMESTER				CREDITS TOTAL
		I	II	III	IV	
1.	FC	04	00	00	00	04
2.	PCC	10	15	00	00	25
3.	PEC	03	06	06	00	15
4.	RMC	02	00	00	00	02
5.	OEC	00	00	03	00	03
6.	EEC	01	00	08	12	21
7.	Non Credit/Audit Course	✓	✓	00	00	
8.	**TOTAL CREDIT**	**20**	**21**	**17**	**12**	**70**

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