Scheme of Studies & Syllabus

Master of Technology
Civil Engineering
2022-23

Department of Civil & Environmental Engineering

SCHOOL OF ENGINEERING & TECHNOLOGY

THE NORTHCAP UNIVERSITY, GURGAON

(Established under Haryana Govt. Notification No. Leg. 32/2006-HARYANA ACT No.25 of 2009)

The department of Civil & Environmental Engineering offers the following programmes during the academic year 2022-23.

- Master of Technology (M.Tech.) in Civil Engineering with specialization in
  - Structural Engineering
  - Construction Engineering & Management and
  - Environmental Engineering

M.Tech. in Civil Engineering programme for regular students and for working professionals will impart research-based knowledge in the selected disciplines of civil engineering. The Full-Time M.Tech. programme will be of 2 years with 4 semesters and the Part-Time M.Tech. programme will be of 3 years with 6 semesters for working professional. The programme has total credits of 70. Also, the student can exit after 1 year of Full-Time M.Tech. programme with a PG diploma in respective specialization completing 50 credits in total. The curriculum is designed in such a way that there are core subjects relevant to overall civil engineering and program electives specific to the respective specializations. Specialization based seminar, minor project, and dissertation in structural engineering, Construction engineering and Management, and Environmental engineering completes the requirement of a Masters' degree in Civil Engineering domain.

M.Tech. Full-Time with 2 years exit

Sem	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	L	T	P	Weekly Contact Hours	Credits
I	CEL501 Safety & Reliability Analysis 3-0-0 (3)	PE-1 3-0-2 (4)	PE-2 3-0-2 (4)	PE-3 3-0-2 (4)	CEC501 Seminar 0-0-4 (2)	CES500 Community Service	12	0	10	22	17
II	CEL502 Optimization Techniques in Civil Engineering 3-0-2 (4)	PE-4 3-0-2 (4)	PE-5 3-0-2 (4)	PE-6 3-0-2 (4)	CED502 Minor Project 0-0-10 (5)	CES502 Community Service (2)* (140 hours)	12	0	18	20	23
III	OE 2-0-2 (3)	MAL616 Research Methodology 2-1-0 (3)	PE-7 3-0-2 (4)	CED601 Dissertation-I 0-0-12 (6)		CES600 Community Service	7	1	16	12	16
IV	CED602 Dissertation-II 0-0-24 (12)					CES602 Community Service (2)* (140 hours)	0	0	24	--	14
TOTAL CREDITS OF THE M.TECH. DEGREE PROGRAMME = 70											**70**

*Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year

THE NORTHCAP UNIVERSITY
POWERED BY Arizona State University

PG Diploma with 1 year exit

Sem	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	L	T	P	Weekly Contact Hours	Credits
I	CEL501 Safety & Reliability Analysis 3-0-0 (3)	PE-1 3-0-2 (4)	PE-2 3-0-2 (4)	PE-3 3-0-2 (4)	CEC501 Seminar 0-0-4 (2)	CES500 Community Service	12	0	10	22	17
II	CEL502 Optimization Techniques in Civil Engineering 3-0-2 (4)	PE-4 3-0-2 (4)	PE-5 3-0-2 (4)	PE-6 3-0-2 (4)	CED502 Minor Project 0-0-10 (5)	CES502 Community Service (2)* (140 hours)	12	0	18	20	23
Summer	CEV502 Skill Based Course (3)	CET502 Industrial Internship (7)									10
EXIT OPTION: PG DIPLOMA in respective specialization; TOTAL CREDITS = 50											50

*Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year

M.Tech Part-Time with 3 years exit

Sem	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	L	T	P	Weekly Contact Hours	Credits
I	CEL501 Safety & Reliability Analysis 3-0-0 (3)	PE-1 3-0-2 (4)	PE-2 3-0-2 (4)		CES500 Community Service	9	0	4	13	11
II	CEL502 Optimization Techniques in Civil Engineering 3-0-2 (4)	PE-3 3-0-2 (4)	PE-4 3-0-2 (4)	CEC501 Seminar 0-0-4 (2)	CES502 Community Service (2)* (140 hours)	9	0	10	19	16
III	PE-5 3-0-2 (4)	OE 2-0-2 (3)	MAL616 Research Methodology 2-1-0 (3)		CES600 Community Service	7	1	4	12	10
IV	PE-6 3-0-2 (4)	CED502 Minor Project 0-0-10 (5)			CES602 Community Service (2)* (140 hours)	3	0	12	5	11
V	PE-7 3-0-2 (4)	CED601 Dissertation-I 0-0-12 (6)				3	0	14	5	10
VI	CED602 Dissertation-II 0-0-24 (12)					0	0	24	--	12
	TOTAL CREDITS OF THE M.TECH. DEGREE PROGRAMME = 70									**70**

*Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year

Department of Civil and Environmental Engineering

Master of Technology in Civil Engineering

Specialization in

1. Structural Engineering
2. Construction Engineering and Management
3. Environmental Engineering

Program Core			
1	Safety and reliability analysis		
2	Optimization techniques in civil engineering		
3	Research Methodology		
4	Seminar		
5	Minor Project		
6	Dissertation- I		
7	Dissertation- II		
Program Electives			
	Structural Engineering	**Construction Engineering & Management**	**Environmental Engineering**
1	Advanced Concrete Technology	Advanced Concrete Technology	Environmental Impact and Risk Assessment
2	Sustainable Built Environment	Construction and Contract Management	Environmental Chemistry
3	Advanced Design of Foundations	Infrastructure Development and Management	Water Supply Engineering
4	Design of Industrial Structures	Resource Management and Control in Construction	Industrial Waste Management
5	Prestressed Concrete Structures	Construction Economics and Finance	Geo-Environmental Engineering
6	Structural Health Monitoring-NDT	Shoring, Scaffolding and Formwork	Global Climate Change Adaptation and Mitigation
7	Earthquake Resistant Design of Structures	Quality & Safety in Construction	Wastewater Engineering
8	Finite Element Analysis	Strategic Technology Management	Environmental Policy, Legislation
9	Structural Dynamics	Flexible System Management	Advanced Wastewater Treatment
10	Theory of Elasticity & Plasticity	Advanced Methods for management research	Air Pollution and Control
11	Principles of Bridge Engineering	Project Planning and Control	Solid and Hazardous Waste Management
12	Matrix Methods of Structural Analysis	Organizational Management	Environmental Hydraulics and Hydrology
13	Prefabricated Structures	Construction Planning and Management	Environmental Modeling and Simulation
14	Theory of plates and shells	Contract Laws and Regulation	Environmental Remediation of Contaminated Sites
15	Design of Tall Structures	Functional Planning, Building Services, & Maintenance Management	Environment and Ecology
16	Advanced Design of Concrete Structures	--	--
17	Repair & Rehabilitation of Structures	--	--