



**GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY: NELLORE
(AUTONOMOUS)**

NELLORE-524317 (A.P) INDIA

**B.TECH IN CIVIL ENGINEERING
COURSE STRUCTURE AND SYLLABI
UNDER RG 22 REGULATIONS**



GEETHANJALI INSTITUTE OF SCIENCE AND TECHNOLOGY
(AUTONOMOUS)
NELLORE – 524137 (A.P) INDIA

DEPARTMENT OF CIVIL ENGINEERING

Course Structure (RG22)

Semester 0

Induction Program: 3weeks
(Common for All Branches of Engineering)

S.No	CourseNo	CourseName	Category	L-T-P-C
1		Physical Activities-Sports, Yoga and Meditation, Plantation	MC	0-0-6-0
2		Career Counseling	MC	2-0-2-0
3		Orientation to all branches—career options, tools, etc.	MC	3-0-0-0
4		Orientation on admitted Branch – corresponding labs, tools and platforms	EC	2-0-3-0
5		Proficiency Units & Productivity Tools	ES	2-1-2-0
6		Assessment on basic aptitude and mathematical skills	MC	2-0-3-0
7		Remedial Training in Foundation Courses	MC	2-1-2-0
8		Human Values & Professional Ethics	MC	3-0-0-0
9		Communication Skills—focus on Listening, Speaking, Reading, Writing skills	BS	2-1-2-0
10		Concepts of Programming	ES	2-0-2-0



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Semester-1(Theory-5,Lab-3)							
Sl. No.	Category	Course Code	Course Title	Hours per week			Credits
				L	T	P	C
1	BSC	22A0001T	Linear Algebra and Calculus	3	0	0	3
2	BSC	22A0004T	Engineering Physics	3	0	0	3
3	HSMC	22A0013T	Communicative English	3	0	0	3
4	ESC	22A0518T	C-Programming & Data Structures	3	0	0	3
5	ESC	22A0302T	Engineering Drawing	1	0	4	3
6	HSMC (Lab)	22A0014P	Communicative English Lab	0	0	3	1.5
7	BSC(Lab)	22A0008P	Engineering Physics Lab	0	0	3	1.5
8	ESC(Lab)	22A0519P	C-Programming & Data Structures Lab	0	0	3	1.5
Total credits							19.5

Category	Credits
Basic Science Course (BSC)	7.5
Engineering Science Course (ESC)	7.5
Humanities and Social Science Course (HSMC)	4.5
Total	19.5



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Semester-2(Theory-5,Lab-3)							
Sl. No.	Category	Course Code	Course Title	Hours per week			Credits
				L	T	P	C
1	BSC	22A0007T	Engineering Chemistry	3	0	0	3
2	BSC	22A0002T	Differential Equations and Vector Calculus	3	0	0	3
3	ESC	22A0203T	Basic Electrical & Electronics Engineering	3	0	0	3
4	ESC	22A0101T	Strength of Materials-I	3	0	0	3
5	ESC	22A0102T	Building Materials & construction	3	0	0	3
6	ESC(Lab)	22A0304T	Engineering Workshop	0	0	3	1.5
7	BSC(Lab)	22A0012P	Engineering Chemistry Lab	0	0	3	1.5
8	ESC(Lab)	22A0103P	Strength of Materials Lab	0	0	3	1.5
Total credits							19.5

Category	Credits
Basic Science Course (BSC)	7.5
Engineering Science Course (ESC)	12
Total	19.5



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III Semester B.Tech. Civil – Course Structure

Sl. No	Category	CourseCode	Course Name	Hours per week			Total Credits
				L	T	P	
1	BSC	22A0016T	Probability and Statistics	3	0	0	3
2	PCC	22A0104T	Strength of Materials-II	3	0	0	3
3	PCC	22A0105T	Surveying	3	0	0	3
4	PCC	22A0106T	Concrete Technology	3	0	0	3
5	PCC	22A0107T	Engineering Geology	3	0	0	3
6	HSMC	22A0022T	Managerial Economics & Financial Analysis	3	0	0	3
7	PCC Lab	22A0108P	Surveying Lab	0	0	3	1.5
8	PCC Lab	22A0109P	Concrete Materials Testing Lab	0	0	3	1.5
9	PCC Lab	22A0110P	Engineering Geology Lab	0	0	3	1.5
10	SOC	22A0111P	Building Planning & Drawing	1	0	2	2
11	MANC	22A0030T	Constitution of India	2	0	0	0
Total credits							24.5

Category	CREDITS
Basic Science Course (BSC)	3
Professional Core Course (PCC)	16.5
Humanities and social science (HSMC)	3
Skill Oriented Course*(SOC)	2
TOTAL CREDITS	24.5



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IV Semester B.Tech. Civil – Course Structure

Sl. No	Category	CourseCode	Course Name	Hours per week			Total Credits
				L	T	P	
1	ESC	22A0112T	Mechanics of Fluids	3	0	0	3
2	BSC	22A0018T	Transforms & Numerical Methods	3	0	0	3
3	PCC	22A0113T	Environmental Engineering	3	0	0	3
4	PCC	22A0114T	Structural Analysis-I	3	0	0	3
5	HSMC	22A0021T	Universal Human Values	3	0	0	3
6	ESC Lab	22A0115P	Mechanics of Fluids Lab	0	0	3	1.5
7	PCC Lab	22A0116P	Environmental Engineering Lab	0	0	3	1.5
8	PCC Lab	22A0117P	CAD Lab	0	0	3	1.5
9	SOC	22A0029P	Soft Skills Lab	1	0	2	2
10	MANC	22A0028T	Environmental Studies	2	0	0	0
Total credits							21.5
Community service project 2 Months (Mandatory) during summer vacation							

Category	CREDITS
Basic Science Course (BSC)	3
Professional core Course (PCC)	9
Engineering Science Course (ESC)	4.5
Skill oriented course*(SOC)	2
Humanities and Social Sciences (HSMC)	3
TOTAL CREDITS	21.5



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V Semester B.Tech. Civil – Course Structure

Sl. No	Category	CourseCode	Course Name	Hours per week			Total Credits
				L	T	P	
1	PCC	22A0118T	Structural Analysis-II	3	0	0	3
2	PCC	22A0119T	Design and Drawing of RCC Structures	3	0	0	3
3	PCC	22A0120T	Soil Mechanics	3	0	0	3
4	OEC/JOE		Open Elective-I	3	0	0	3
5	PEC		Professional elective course-I	3	0	0	3
6	PCC Lab	22A0124P	Advanced Surveying Lab	0	0	3	1.5
7	PCC Lab	22A0125P	Soil Mechanics Lab	0	0	3	1.5
8	SOC (Advanced)	22A0126P	Building Information Modeling	1	0	2	2
9	MANC	22A0032T	Research Methodology	2	0	0	0
Community Service Project 2 Months (Mandatory) after second year (to be evaluated during V semester)				0	0	0	1.5
Total credits							21.5

Category	CREDITS
Professional core Course (PCC)	12
Professional Elective course (PEC)	3
Open Elective Course/Job orientedelective (OEC/JOE)	3
Skill advanced course/ soft skill course*(SOC)	2
Summer Internship	1.5
TOTAL CREDITS	21.5



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Professional Elective I

SL. No	Course Code	Course Name
1	22A0121T	Water resources engineering
2	22A0122T	Air Pollution & Control
3	22A0123T	Construction Technology & Project Management

Open Elective-I

SL. No	Course Code	Branch	Course Name
1	22A0512T	CSE & Allied branches	Data Base Management system
2	22A0214Ta	EEE	Power electronics
3	22A0430T	ECE	Principles of Communication system
4	22A0321Ta	MECH	Automobile Engineering
5	22A0321Tb		Fundamentals of Drone Technology



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VI Semester B.Tech. Civil – Course Structure

Sl.No	Category	CourseCode	Course Name	Hours per week			Total Credits
				L	T	P	
1	PCC	22A0127T	Quantity surveying and Estimation	3	0	0	3
2	PCC	22A0128T	Design of Steel Structures	3	0	0	3
3	PCC	22A0129T	Highway Engineering	3	0	0	3
4	PEC		Professional elective course-II	3	0	0	3
5	OEC/JOE		Open Elective-II	3	0	0	3
6	PCC Lab	22A0133P	Highway Engineering Lab	0	0	3	1.5
7	PCC Lab	22A0134P	Quantity Surveying Lab	0	0	3	1.5
8	PCC Lab	22A0135P	Design Studio Lab with STAAD Pro.	0	0	3	1.5
9	SOC (Advanced)	22A0136P	E-TABS	1	0	2	2
10	MANC		Intellectual Property Rights & Patents	2	0	0	0
Total credits							21.5
Industrial/Research Internship (Mandatory) 2 Months during summer vacation							

Category	CREDITS
Professional core course (PCC)	13.5
Professional Elective course (PEC)	3
Open Elective Course/Job oriented elective (OEC/JOE)	3
Skill advanced course/ soft skill course*(SOC)	2
Mandatory course (AICTE)(MANC)	0
Industrial/Research Internship (Mandatory) 2 Months	-
TOTAL CREDITS	21.5



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Professional Elective II

SL. No	Course Code	Course Name
1	22A0130T	Foundation Engineering
2	22A0131T	Environmental Impact Assessment
3	22A0132T	Low cost housing techniques

Open Elective-II

SL. No	Course Code	Branch	Course Name
1	22A0431T	ECE	Microcontroller & Applications
2	22A0327Ta	MECH	Introduction to composites
3	22A0327Tb		Hydraulic machinery
4	22A0024T	Basic science	Entrepreneurship & Innovation
5	22A0528T	CSE	Machine learning
6	22A0213Ta	EEE	Control systems



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VII Semester B.Tech. Civil – Course Structure

Sl.no	Category	Course Code	Course Name	Hours per week			Total Credits
				L	T	P	
1	PEC		Professional elective course-III	3	0	0	3
2	PEC		Professional Elective Course– IV	3	0	0	3
3	PEC		Professional Elective Course– V	3	0	0	3
4	OEC/JOE		Open Elective-III	3	0	3	3
5	OEC/JOE		Open Elective-IV	3	0	3	3
6.	HSMC		Management Science	3	0	0	3
7	SOC (Advanced)	22A0146P	Design and Drawing of Irrigation Structures	1	0	2	2
Industrial/Research Internship 2 Months (Mandatory) after third year (to be evaluated during VII semester (22A0147P)				0	0	0	3
Total credits							23

Category	CREDITS
Professional Elective course (PEC)	9
Open Elective Course/Job oriented Elective (OEC/JOE)	6
Humanities and Social Science Elective (HSE)	3
Skill advanced course/ soft skill course*(SOC)	2
Industrial/Research Internship	3
TOTAL CREDITS	23



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Professional Elective III

SL. No	Course Code	Course Name
1	22A0137T	Railways, Airport and harbor Engineering
2	22A0138T	Ground Improvement Techniques
3	22A0139T	Advanced Structural Engineering

Professional Elective IV

SL. No	Course Code	Course Name
1	22A0140T	Industrial Waste and Wastewater Management
2	22A0141T	Repair and Rehabilitation of structures
3	22A0142T	Building Science and Technology

Professional Elective V

SL. No	Course Code	Course Name
1	22A0143T	Prestressed Concrete
2	22A0144T	Remote Sensing and GIS
3	22A0145T	Bridge Engineering



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Open Elective-III

SL. No	Course Code	Branch	Course Name
1	22A0433T	ECE	Industrial Electronics
2	22A0330Ta	MECH	Measurement and Mechatronics
3	22A0330Tb		Unconventional Machining Processes
4	22A0529T	CSE	Cloud Computing
5	22A0241Ta	EEE	Smart Grid
6	22A0026T	BS	Human Resources & Management

Open Elective- IV

SL. No	Course Code	Branch	Course Name
1	22A0432T	ECE	Basics VLSI Design
2	22A0332Ta	MECH	Nondestructive Evaluation
3	22A0332Tb		Renewable Energy sources
4	22A0534T	CSE	Introduction to cyber security
5	22A0232Ta	EEE	Electric vehicles
6	22A0025T	BS	Business Environment



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VIII Semester B.Tech. Civil – Course Structure

Sl.No	Category	CourseCode	Course Name	Hours per week			Total Credits
				L	T	P	
1	Major Project	22A0148P	Project	0	0	24	12
Total credits							12

Open Elective courses offered by CE Dep

Year-Sem	Course code	Open Elective
III-I	22A0149T	Building Materials
III-II	22A0150T	Environmental Economics
IV-I	22A0151T	Disaster Management
IV-I	22A0152T	Construction Management



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Types of Courses:

TYPE OF COURSES	COURSE CATEGORY	CODE	DEPARTMENT
			CE/EEE/ME/ECE/CSE/AI&DS
Foundation	Engineering Sciences	ESC	24
	Basic Sciences	BSC	21
	Humanities & Social Sciences and Management	HSMC	13.5
Core	Professional Core	PCC	51
Project	Project & Internship (12)	PROJ	16.5
	Internship (4.5)		
Elective courses	Professional Elective	PEC	15
	Open Elective (including two MOOCs)	OEC	12
Mandatory Courses	Mandatory	MC	-
	Skill Oriented Courses	SC	10
Total Credits			163



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LIST OF HONOR SUBJECTS

1. The honour subjects are having a total of 20 additional credits.

2. Students should acquire 4 credits through MOOCS compulsory to award the honour degree

S.N O	Course Code	Course Name	L-T-P	Credits
POOL-1				
1	22A0153T	Mechanics of Materials	3-1-0	4
2	22A0154T	Admixtures and special concretes	3-1-0	4
3	22A0155T	Open channel flow	3-1-0	4
POOL-2				
1	22A0156T	Global Navigation Satellite System and applications	3-1-0	4
2	22A0157T	Cost Effective Housing Techniques	3-1-0	4
3	22A0158T	Remote sensing and digital image processing of satellite data	3-1-0	4
POOL-3				
1	22A0159T	Expansive Soil	3-1-0	4
2	22A0160T	Principles of construction management	3-1-0	4
3	22A0161T	Analysis and design of bituminous pavement	3-1-0	4
POOL-4				
1	22A0162T	Sustainable Transportation Systems	3-1-0	4
2	22A0163T	Finite Element Method	3-1-0	4
3	22A0164T	Pavement Materials	3-1-0	4

POOL-5				
1	22A0165T	Environmental chemistry	3-1-0	4
2	22A0166T	Rural water resources management	3-1-0	4
3	22A0167T	Geosynthetics And Its Applications	3-1-0	4

LIST OF MINOR SUBJECTS

S.NO	Course Name	Course Name	L-T-P	Credits
1	22A0168T	Basics of Strength of Materials	3-1-0	4
2	22A0169T	Introduction to Fluid Mechanics	3-1-0	4
3	22A0170T	GPS Surveying	3-1-0	4
4	22A0171T	Traffic Engineering	3-1-0	4
5	22A0172T	Construction Practice	3-1-0	4
6	22A0173T	Introduction in Geotechnical Engineering	3-1-0	4
7	22A0174T	Geographic Information System	3-1-0	4
8	22A0175T	Project planning & control	3-1-0	4
9	22A0176T	Water supply Engineering	3-1-0	4
10	22A0177T	Railway Engineering	3-1-0	4