



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF CIVIL ENGINEERING

COURSE STRUCTURE

For UG – R20

B. TECH - CIVIL ENGINEERING

(Applicable for batches admitted from 2020-2021)



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA - 533 003, Andhra Pradesh, India



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF CIVIL ENGINEERING

COURSE STRUCTURE

I Year – I SEMESTER

S. No	Course Code	Subjects	L	T	P	Credits
1	BSC1101	Mathematics – I (Calculus & Differential Equations)	3	0	0	3
2	HSMC1101	Communicative English	3	0	0	3
3	BSC1102	Engineering Physics	3	0	0	3
4	ESC1101	Engineering Drawing	1	0	4	3
5	ESC1102	Engineering Geology (Integrated) (Theory & Lab)	2	0	2	3
6	HSMC1102	English Communication Skills Laboratory	0	0	3	1.5
7	BSC1103	Engineering Physics Lab	0	0	3	1.5
8	ESC1103	Basics of Civil Engg. Work Shop (Lab)	0	0	3	1.5
Total Credits			19.5			

I Year – II SEMESTER

S. No	Course Code	Subjects	L	T	P	Credits
1	BSC1201	Mathematics – II (Linear Algebra & Numerical Methods)	3	0	0	3
2	BSC1202	Engineering Chemistry	3	0	0	3
3	ESC1201	Engineering Mechanics	3	0	0	3
4	ESC1202	Programming for Problem Solving Using C	3	0	0	3
5	ESC1203	Building Materials and Concrete Technology	3	0	0	3
6	BSC1203	Engineering Chemistry Lab	0	0	3	1.5
7	ESC1204	Programming for problem Solving Using C Lab	0	0	3	1.5
8	ESC1205	Building Planning and Computer Aided Building Drawing	0	0	3	1.5
9	MC1201	Environmental Science	2	0	0	0
Total Credits			19.5			

***Breakup of credits for Engineering Graphics/Engineering Workshop shall be 1-0-4 (as per AICTE model curriculum)**

Universities/Institutions may swap a few courses between 1st and 2nd semesters to balance the workload of teaching and laboratory schedule.



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF CIVIL ENGINEERING

II Year – I SEMESTER

S. No	Course Code	Course Title	L	T	P	Credits
1	BSC301	Mathematics -III (Vector Calculus, Transforms and PDE)	3	0	0	3
2	PCC301	Strength of Materials - I	3	0	0	3
3	PCC302	Fluid Mechanics	3	0	0	3
4	PCC302	Surveying and Geometrics	3	0	0	3
5	PCC303	Highway Engineering	3	0	0	3
6	PCC304	Concrete Technology Lab	0	0	3	1.5
7	PCC305	Highway Engineering Lab	0	0	3	1.5
8	PCC306	Surveying Field Work – I (Lab)	0	0	3	1.5
9	SC301	Skill oriented course*	1	0	2	2
10	MC301	Constitution of India	2	0	0	0
		Total Credits				21.5

II YEAR – II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	PC401	Complex Variables and Statistical Methods	3	0	0	3
2	PC402	Strength of Materials -II	3	0	0	3
3	ES401	Hydraulics and Hydraulic Machinery	3	0	0	3
4	PC403	Environmental Engineering	3	0	0	3
5	PC404	Managerial Economics & Financial Analysis	3	0	0	3
6	PC405	Environmental Engineering Lab	0	0	3	1.5
7	PC406	Strength of Material Lab	0	0	3	1.5
8	PC407	Fluid Mechanics & Hydraulics Machinery Lab	0	0	3	1.5
9	SC401	Skill oriented course*	1	0	2	2
10	PR401	Industrial/Research Internship (Mandatory) 2 Months... to be evaluated in III year I semester				
		Total Credits				21.5
Honors/ Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)			3	1	0	4



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF CIVIL ENGINEERING

III YEAR – I SEMESTER

S. No	Course Code	Course Title	L	T	P	Credits
1	PC501	Structural Analysis	3	0	0	3
2	PC502	Design and Drawing of Reinforced Concrete Structures	3	0	0	3
3	PC503	Geotechnical Engineering-1	3	0	0	3
4	OE501	Open Elective Course/Job Oriented Elective (OE-1)	3	0	0	3
5	PE501	Professional Elective course - I	3	0	0	3
6	PC504	Professional Core courses Lab Survey Camp (Field work)	0	0	3	1.5
7	PC505	Geotechnical Engineering Lab	0	0	3	1.5
8	PC501	Skill advanced course: Design of Special Structure, Chimney, Hinge Tanks, spill ways etc.,	1	0	2	2
9	MC501	Essence of Indian Traditional Knowledge	2	0	0	0
10	PR501	Summer Internship 2Months (Mandatory) after second year (to be evaluated during V semester)				1.5
		Total Credits				21.5
Honors/ Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)			3	1	0	4



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF CIVIL ENGINEERING

III YEAR – II SEMESTER

S. No	Course Code	Course Title	L	T	P	Credits
1	PC601	Design and Drawing of Steel Structures	3	0	0	3
2	PC602	Water Resource Engineering	3	0	0	3
3	PC603	Geotechnical Engineering-2	3	0	0	3
4	PE601	Professional Elective course -II	3	0	0	3
5	OE601	Open Elective Course/Job oriented Elective (OE-2)	3	0	0	3
6	PC604	Professional Core courses Lab (Estimation, Costing and Contracts)	0	0	3	1.5
7	PC605	Professional Core courses Lab (Remote Sensing & GIS Lab)	0	0	3	1.5
8	PC606	Professional Core courses Lab Civil Engineering Practice	0	0	3	1.5
9	SC601	Skill advanced course/ soft skill course: Computational Tools	1	0	2	2
10	MC601	Employability Skills	2	0	0	0
11	PR601	Industrial/Research Internship (Mandatory) 2 Months... to be evaluated in IV year I semester				
		Total Credits				21.5
Honors/ Minor courses (The hours distribution can be 3-0-2 or 3-1-0also)			3	1	0	4



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF CIVIL ENGINEERING

IV YEAR – I SEMESTER

S. No	Course Code	Course Title	L	T	P	Credits
1	PE701	Professional Core course - III	3	0	0	3
2	PE702	Professional Core course - IV	3	0	0	3
3	PE703	Professional Core course - V	3	0	0	3
4	OE701	Open Elective Courses/ Job oriented elective (OE-III)	2	0	2	3
5	OE702	Open Elective Course/Job oriented elective (OE-IV)	2	0	2	3
6	HSC701	Universal Human Values-2: Understanding Harmony	3	0	0	3
7	SC701	Skill advanced course/ soft skill course: Project planning & town planning,	1	0	2	2
8	PR701	Industrial/Research Internship 2 Months (Mandatory) after third year (to be evaluated during VII semester)				3
		Total Credits				23
Honors/ Minor courses (The hours distribution can be 3-0-2or3-1-0also)			3	1	0	4

IV YEAR – II SEMESTER

S. NO	CATEGORY	COURSE TITLE	L	T	P/D	C
1	Major Project	PROJ	-	-	-	12
		INTERNSHIP (6 Months)				
		Total Credits				12

Major Project-12;

Internship-6 Months;

Total-12



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF CIVIL ENGINEERING

Professional Electives R20 (5 PE x 3 = 15 Credits)

(Department can offer Maximum 2 Subjects from Each PE, elected by the students)

Note: Student must choose subjects which were not opted earlier

PE starts from III-I

Professional Elective-I	Professional Elective-II	Professional Elective-III	Professional Elective-IV	Professional Elective-V
a) Construction Technology & Management	a) Advanced Structural Analysis	a) Advanced Structural Engineering	a) Ground Improvement Techniques	a) Design & Drawing of Irrigation Structures
b) Remote Sensing and GIS	b) Architecture and Town Planning	b) Bridge Engineering	b) Geo-Spatial Technologies	b) Earth & Rock fill Dams
c) Environmental Impact Assessment	c) Road Safety Engineering	c) Structural Dynamics	c) Disaster Management & Mitigation	c) Urban Hydrology
d) Low Cost Housing	d) Traffic Engineering	d) Urban Transportation Planning	d) Soil Dynamics & Machine Foundations	SWAYAM / NPTEL / MOOCS COURSES (12 weeks duration)



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF CIVIL ENGINEERING

HONORS R20 (Starts from II-II)

(4x4+2 MOOCS/NPTELx2=20 Credits) for Civil Engg. Students

Note: Student must choose subjects which were not opted earlier

(Any FOUR courses may be chosen by the Student from each Pool)

Structural Engineering	Geotechnical Engineering	Environment and Water Resource Engineering	Transportation Engineering	Construction Technology and Management
Finite Element Methods	Reinforced Soil Structures	Urban Hydrology	Traffic Engineering	Construction Technology and Management
Matrix Analysis of Structures	Advanced Foundation Engineering	Water and Wastewater Management	Intelligent Transportation System	Architecture & Town Planning
Earthquake Resistant Design	Earth Retaining Structures	Water Resources Planning and Management	Railway, Harbor and Airport Engineering	Repairs and Maintenance of Structures
Pre-stressed concrete	Geoenvironmental Engineering	Environmental Impact Assessment	Pavement Management System	Disaster Management and Mitigation
Repair & Retro-fitting of Buildings	Earth & Rock Fill Dams	Air Pollution and Control	Urban Transportation Planning	Precast and Prefabricated Structures



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF CIVIL ENGINEERING

OPEN ELECTIVES R20
(4 OE x 3 = 12 Credits)

Note: Student must choose subjects which were not opted earlier.
(OE Starts from III-I)

Open Elective-1 in III year I semester:

- a) Strength of Materials
- b) Fluid Mechanics
- c) Surveying and Geomatics

Open Elective-2 in III year II semester:

- a) Elements of Civil Engineering
- b) Environmental Engineering
- c) Disaster Management

Open Elective-3 in IV year I semester:

- a) Highway Engineering
- b) Safety Engineering
- c) Environmental Management
- d) Urban Planning

Open Elective-4 in IV year II semester:

- a) Water Resource Engineering
- b) Hydraulics and Hydraulic Machinery
- c) Green Technologies
- d) Remote Sensing & GIS



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF CIVIL ENGINEERING

Minor R20 (Starts from II-II)
(4x4+2 MOOCS/NPTELx2 = 20 Credits)

Note: Student must choose subjects which were not opted earlier

Minor-1 in II year II semester:

- a) Construction Technology and Infrastructure Management
- b) Seismology and Earthquake Engineering

Minor-2 in III year I semester:

- a) Environmental Engineering and Management
- b) Solid Mechanics

Minor-3 in III year II semester:

- a) Railways, Harbours and Docks
- b) Architecture and Smart City

Minor-4 in IV year I semester:

- a) Irrigation Engineering
- b) Geoinformatics