

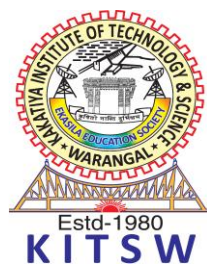
B.TECH. CURRICULUM

ACADEMIC YEAR: 2025-26

DEPARTMENT OF CIVIL ENGINEERING

**Undergraduate Rules and Regulations-2024(URR24-R25)
In accordance with the National Education Policy 2020
w.e.f AY 2025-26**

**Regulations Governing the
Choice Based Credit System and
Multiple Entry and Multiple Exit Options
with
Competancy-Focused Outcome Based Curriculum (CF-OBC)**



KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE, WARANGAL – 506 015

TELANGANA

(UGC Autonomous Institute Under Kakatiya University, Warangal)

B. Tech (CE) -CURRICULUM (KITSW-URR24-R25)**SEMESTER-WISE CURRICULUM WITH SCHEME OF INSTRUCTIONS**

Abbreviations

L	Lecture Hour	E	Total Engagement in Hours
T	Tutorial Hour	C	Credit Assigned
P	Practical Hour		

I SEMESTER (Stream – II)(URR24-R25)

S. No.	Category	Course Code	Course Title	Lectures / week				Credits
				L	T	P	E	
-	IKSC	U24IK100	AICTE Mandated Student Induction Programme (Universal Human Values - I)					-
1	BSC	U24MH101	Differential Calculus and Ordinary Differential Equations	2	1	-	3	3
2	BSC	U24CY102A	Engineering Chemistry (from Pool – III)	2	1	2	5	4
3	PCC	U24CE103	Engineering Mechanics	2	1	-	3	3
4	ESC	U24CE104	Programming for Problem Solving with C	2	1	2	5	4
5	HSMC	U24MH105	English Communication and Report Writing	2	-	-	2	2
6	VAC	U24VA106	Sports & Yoga	-	-	2	2	1
7	ESC	U24CE107	Essentials of Civil Engineering	2	-	-	2	2
8	ELC	U24EL108	Practicum-I	-	-	-	-	1
9	VAC	U24VA109	SEA-I/SAA-I	-	-	-	-	1
10	AEC	U24AE110	Expert Talk Series-I	-	-	-	-	1
			Total:	12	4	6	22	22
Summer/ Inter-sem Bridge Courses (Approved by BoS and Dean,AA): 1 week to 10 days: 1 credit to each Bridge course under additional learning (will be printed on grade sheet)				NIL				

Pool – III (Chemistry)		
Sr. No.	Course Code	Course Title
1.	U24CY102A	Engineering Chemistry (for Mechanical Engineering)
2.	U24CY102B	Engineering Chemistry (Common to CSM, CSD, CSN, CSO & IT)
3.	U24CY102C	Engineering Chemistry (for Civil Engineering)

II SEMESTER (Stream - II)(URR24-R25)

S. No.	Category	Course Code	Course Title	Lectures / week				Credits
				L	T	P	E	
1	BSC	U24MH201	Matrix Theory and Vector Calculus	2	1	-	3	3
2	BSC	U24PY202C	Engineering Physics (from Pool-I)	2	1	-	3	3
3	PCC	U24CE203	Strength of Materials	2	1	-	3	3
4	ESC	U24CE204	Data Structures through C	2	1	-	3	3
5	ESC	U24EE205A	Basic Electrical and Electronics Engineering (from Pool - II)	2	1	-	3	3
6	VAC	U24CY206	Environmental Science	2	-	-	2	-
7	AEC	U24AE207	IDEA Lab Workshop	-	-	2	2	1
8	BSC	U24PY209C	Engineering Physics Laboratory	-	-	2	2	1
9	ESC	U24CE210	Data Structures through C Laboratory	-	-	2	2	1
10	ESC	U24EE211A	Basic Electrical Engineering Laboratory	-	-	2	2	1
			Total:	12	5	8	25	19
Summer/ Inter-sem Bridge Courses (Approved by BoS and Dean,AA): 1 week to 10 days: 1 credit to each Bridge course under additional learning (will be printed on grade sheet)								

Pool – I (Physics)		
Sr. No.	Course Code	Course Title
1.	U24PY202A	Engineering Physics (for Mechanical Engineering)
2.	U24CY202B	Engineering Physics (Common to CSM, CSD, CSN, CSO & IT)
3.	U24CY202C	Engineering Physics (for Civil Engineering)

Pool – II (Basic Electrical & Electronics Engineering)		
Sr. No.	Course Code	Course Title
1.	U24EE205A	Basic Electrical and Electronics Engineering (for CE & ME)
2.	U24EE205B	Basic Electrical Engineering (Common to CSM, CSD, CSN, CSO & IT)

Bridge Courses for exit:

Successful completion of two subjects (6-Credits) during 2-months internship at the institute OR Successful completion of two suitable skill based courses (external) to qualify for Certification

A. After First Year: (UG Certificate in CE)

The candidate should pass any two of the following additional courses (ITI Level) during the 2-Months internship at institute

Exit Option to Qualify UG Certificate in CE: Any Two (02) Courses during the 2 - Months internship									
S. No.	Category	Course Code	Course Title	L	T	P	O	E	C
1	PCC	U24CE212X	Fundamentals of Surveying	2	-	2	-	4	3
2	PCC	U24CE213X	Civil Engineering Materials	2	-	2	-	4	3
3	PCC	U24CE214X	Construction Practices	2	-	2	-	4	3
4	PCC	U24CE215X	Any other course approved by BoS Chair and Dean AA	2	-	2	-	4	3

(OR)

Any two suitable skill based courses to qualify for Certification.

Exit Option to Qualify UG Certificate in CE: Any Two (02) Skill based Courses -:									
S. No.	Category	Course Code	Course Title	L	T	P	O	E	C
1	SEC	U24SE212X	Drone Technician https://drive.google.com/file/d/1yMQdvaNzw1a_14laKsR9oxl8LrSAmBUl/view	-	-	6	-	6	3
2	SEC	U24SE213X	Building Planning and Drawing in 3D https://nstihyderabad1.dgt.gov.in/sites/default/files/2023-07/Training%20Calendar%202023-24_compressed.pdf	-	-	6	-	6	3
3	SEC	U24SE214X	Training in Total Station http://www.geoinstituteoftechnologies.in/land-survey-courses-in-hyderabad	-	-	6	-	6	3
4	SEC	U24SE215X	Land Surveyor https://nac.edu.in/long-term-courses/	-	-	6	-	6	3
5	SEC	U24SE216X	Any other skill based course approved by BoS Chair and Dean AA	-	-	6	-	6	3

III SEMESTER (Stream-II)(URR24-R25)

Sl. No.	Category	Course Code	Course Title	Lectures / week				Credits
				L	T	P	E	C
1	BSC	U24MH301A	Numerical and Statistical Methods(for Civil Engineering)	2	1	-	3	3
2	PCC	U24CE302	Construction Materials	2	1	-	3	3
3	PCC	U24CE303	Surveying	2	1	-	3	3
4	PCC	U24CE304	Mechanics of Materials	2	1	-	3	3
5	ESC	U24CE305	Python Programming	2	1	-	3	3
6	PCC	U24CE307	Engineering Geology	2	1	-	3	3
7	PCC	U24CE308	Construction Materials Lab	-	-	2	2	1
8	PCC	U24CE309	Surveying Lab	-	-	2	2	1
9	ESC	U24CE310	Python Programming Lab	-	-	2	2	1
Total:				12	6	6	24	21
Summer/ Inter-sem Bridge Courses (Approved by BoS and Dean, AA): 1 week to 10 days: 1 credit to each Bridge course under additional learning (will be printed on grade sheet)								

Branch Specific Mathematics:

S. No.	Course Code	Course Title
1.	U24MH301A	Numerical and Statistical Methods (for Civil Engineering)
2.	U24MH301B	Applied Mathematics (Mechanical Engineering)
3.	U24MH301D	Applied Mathematics (Electronics and Communication Engineering)
4.	U24MH301E	Essential Mathematics and Statistics for Machine Learning (AI&ML)
5.	U24MH301F	Essential Mathematics and Statistics for Data Science (Data Science)
6.	U24MH301G	Applied Mathematics (Electrical &Electronics Engineering)

IV SEMESTER (STREAM -II)(URR24-R25)

Sl. No.	Category	Course Code	Course Title	Lectures / week			E	Credits
				L	T	P		
1	PCC	U24CE401	Fluid Mechanics	2	1	-	3	3
2	PCC	U24CE402	Concrete Technology	2	1	-	3	3
3	PCC	U24CE403	Theory of Structures	2	1	-	3	3
4	PCC	U24CE404	Engineering Hydrology	2	1	-	3	3
5	PCC	U24CE405	Soil Mechanics	2	1	-	3	3
6	VAC	U24VA406B	Soft and Interpersonal Skills	-	-	2	2	1
7	PCC	U24CE407	Fluid Mechanics Lab	-	-	2	2	1
8	PCC	U24CE408	Concrete Technology Lab	-	-	2	2	1
9	PCC	U24CE409	Soil Mechanics Lab	-	-	2	2	1
10	PCC	U24CE410	Advanced Surveying Lab	-	-	2	2	1
11	VAC*	U24CH411*	Environmental Studies*	2*	1*	-		-
Total:				12	5	8	25	20
Summer/ Inter-sem Bridge Courses (Approved by BoS and Dean, AA): 1 week to 10 days: 1 credit to each Bridge course under additional learning (will be printed on grade sheet)								

*For Lateral Entry Students Only

Bridge Courses for exit:

Successful completion of two subjects (6-Credits) during 2-months internship at the institute OR Successful completion of two suitable skill based courses (external) to qualify for Certification

B. After Second Year: (UG Diploma in CE)

(i) The candidate should pass any two of the following additional courses (Diploma Level) during the 2- Months internship at institute

Exit Option to Qualify UG Diploma in CE: Any Two (02) Courses during the 2 - Months internship									
S. No.	Category	Course Code	Course Title	L	T	P	O	E	C
1	PCC	U24CE412X	Transportation Engineering	2	-	2	-	4	3
2	PCC	U24CE413X	Environmental Engineering	2	-	2	-	4	3
3	PCC	U24CE414X	Design of Reinforced Concrete Structures	2	-	2	-	4	3
4	PCC	U24CE415X	Any other course approved by BoS Chair and Dean AA	2	-	2	-	4	3

(OR)

Any two suitable skill based courses to qualify for Diploma.

Exit Option to Qualify UG Diploma in CE: Any Two (02) Skill based Courses -:									
S. No.	Category	Course Code	Course Title	L	T	P	O	E	C
1	SEC	U24SE413X	Certificate Course in Civil Structure https://www.citdindia.org/images/pdf/UPDATED-CAD-CAM-CAE-COURSES-DETAILS.pdf	-	-	6	-	6	3
2	SEC	U24SE414X	3DS MAX&REVIT STRUCTURE https://www.citdindia.org/images/pdf/UPDATED-CAD-CAM-CAE-COURSES-DETAILS.pdf	-	-	6	-	6	3
3	SEC	U24SE415X	Highway Works Supervisor https://nac.edu.in/long-term-courses/	-	-	6	-	6	3
4	SEC	U24SE416X	Training in DGPS http://www.geoinstituteoftechnologies.in/land-survey-courses-in-hyderabad	-	-	6	-	6	3
5	SEC	U24SE417X	Any other skill based course approved by BoS Chair and DeanAA	-	-	6	-	6	3

B. Tech Honours with Research:

Students opting for B. Tech Honours with Research, shall undergo a 2-Month Mandatory Research Internship-I (5 Credits) at respective department during the summer vacation after IV Semester.

V SEMESTER (STREAM -II)(URR24-R25)

S. No.	Category	Course Code	Course Title	Lectures / week				Credits
				L	T	P	E	C
1	OE	U24OE501X SDG	Open Elective -SDGB	2	1	-	3	3
2	PCC	U24CE502	Environmental Engineering	2	1	-	3	3
3	PCC	U24CE503	Highway Engineering	2	1	-	3	3
4	PCC	U24CE504	Design of Reinforced Concrete Structures	2	1	-	3	3
5	PCC	U24CE505	Hydraulics & Hydraulic Machinery	2	1	-	3	3
6	IKSC	U24IK506A	Essence of Indian Traditional Knowledge	2	-	-	2	2
7	PCC	U24CE507	Environmental Engineering Laboratory	-	-	2	2	1
8	PCC	U24CE508	Highway Engineering Laboratory	-	-	2	2	1
9	ELC	U24CE509	Seminar	-	-	2	2	1
10	PCC	U24CE510	Computer Aided Building Drawing Laboratory	-	-	2	2	1
Total:				12	5	8	25	21
Additional Learning [@] : Maximum credits allowed for Honours/Minor				-	-	-	-	5
Total credits for Honours/Minor students:				-	-	-	-	26
Summer/ Inter-sem Bridge Courses (Approved by BoS and Dean,AA): 1 week to 10 days: 1 credit to each Bridge course under additional learning (will be printed on grade sheet)				NIL				

Sustainable Development Goals Basket (OE - SDGB)		
S. No.	Course Code	Course Title
1.	U24OE501E	Renewable Energy Systems(EED)
2.	U24OE501H	Environment & Climate IoT (CSN)
3.	U24OE501L	Sensors and Actuators for Sustainable Smart Cities and Healthcare (ECIED)
4.	U24OE501Y	Automotive Engineering for Sustainable development (MED)
5.	U24OEX01	Any other course approved by BoS Chair and Dean AA

VI SEMESTER (STREAM-II)(URR24-R25)

S. No.	Category	Course Code	Course Title	Lectures / week				Credits
				L	T	P	E	
1	OE	U24OE601X -SE	Open Elective – S&EB	2	1	-	3	3
2	PEC	U24CE602	Program Elective –I / MOOCs-I	2	1	-	3	3
3	PCC	U24CE603	Water Resources and Irrigation Engineering	2	1	-	3	3
4	PCC	U24CE604	Design of Steel Structures	2	1	-	3	3
5	PCC	U24CE605	Foundation Engineering	2	1	-	3	3
6	IKSC	U24IK606B	Universal Human Values - II	2	-	-	2	2
7	HSMC	U24MH607	Technical English	-	-	2	2	1
8	PCC	U24CE608	Structural Detailing Laboratory	-	-	2	2	1
9	ELC	U24CE609	Mini Project	-	-	2	2	1
Total:				12	5	6	23	20
Additional Learning@:Maximum credits allowed for Honours/Minor				-	-	-	-	5
Total credits for Honours/Minor students:				-	-	-	-	25
Summer/ Inter-sem Bridge Courses (Approved by BoS and Dean,AA): 1 week to 10 days: 1 credit to each Bridge course under additional learning (will be printed on grade sheet)				NIL				

Startups & Entrepreneurship Basket (OE - S&EB)		
S. No.	Course Code	Course Title
1.	U24OE601A-SE	Design Thinking
2.	U24OE601B-SE	Innovative Product Design and Development
3.	U24OE601C-SE	Entrepreneurship
4.	U24OE601D-SE	Design Studio
5.	U24OE601Z-SE	Any other course approved by BoS Chair and Dean AA

Bridge Courses for exit:

Successful completion of two subjects (6-Credits) during 2-months internship at the institute

OR

Successful completion of two suitable skill based courses (external) to qualify for Certification C. After Third Year: (B. Voc. in CE)

(i) The candidate should pass any two of the following additional courses (Degree Level) during the 2-Months internship at institute

Exit Option to Qualify B. Voc in CE: Any Two (02) Courses during the 2 - Months internship									
S. No.	Category	Course Code	Course Title	L	T	P	O	E	C
1	PCC	U24CE610X	Estimation & Valuation	2	-	2	-	4	3
2	PCC	U24CE611X	Advanced Concrete Technology	2	-	2	-	4	3
3	PCC	U24CE612X	Traffic Engineering	2	-	2	-	4	3
4	PCC	U24CE613X	Any other course approved by BoS Chair and Dean AA	2	-	2	-	4	3

(OR)

(ii) Any two suitable skill based courses to qualify for B. Voc in CE Degree.

Exit Option to Qualify B. Voc in CE: Any Two (02) Skill based Courses -:									
S. No.	Category	Course Code	Course Title	L	T	P	O	E	C
1	SEC	U24SE610X	Finishing School program for fresh Civil Engineering Graduates https://nac.edu.in/finishing-school/	-	-	6	-	6	3
2	SEC	U24SE611X	Digital Photogrammetry and Remotesensing - https://www.surveyofindia.gov.in/pages/courses-offered	-	-	6	-	6	3
3	SEC	U24SE612X	Practical Aspects of Construction Management (PACM) - Site Engineer (Construction Management Training Institute - https://cmti.co.in/civil-engineering-certification-courses.html)	-	-	6	-	6	3
4	SEC	U24SE613X	NITI Aayog Internship - https://www.niti.gov.in/internship	-	-	6	-	6	3
5	SEC	U24SE614X	Any other skill based course approved by BoS Chair and Dean AA	-	-	6	-	6	3

Note to HoDs on PCC: Under PCC the departments shall plan appropriate courses upto 6th semester overing GATE syllabus).

VII SEMESTER (STREAM -II)(URR24-R25)

S. No.	Category	Course Code	Course Title	Lectures / week				Credits
				L	T	P	E	C
1	OE	U24OE701X -MB	Open Elective -MB	2	1	-	3	3
2	PEC	U24CE702	Program Elective - II/ MOOCs-II	2	1	-	3	3
3	PCC	U24CE703	Prestressed concrete	2	1		3	3
4	PCC	U24CE704	Estimation & Valuation	1	-	4	5	3
5	PCC	U24CE705	Construction Management and Equipment	2	1	-	3	3
6	PCC	U24CE706	Civil Engineering Software Applications Laboratory	-	-	2	2	1
7	PCC	U24CE707	Building Information Modelling Laboratory	-	-	2	2	1
8	ELC	U24CE708	Internship Evaluation	-	-	2	2	1
9	ELC	U24CE709	Major Project Phase-1 / Industrial Internship -1	-	-	8	8	4
Total:				09	4	18	31	22
Additional Learning@:Maximum credits allowed for Honours/Minor				-	-	-	-	4
Total credits for Honours/Minor students:				-	-	-	-	26

Management Courses Basket (OE-MB)		
S. No.	Course Code	Course Title
1.	U24OE701A-MB	Management Economics and Accountancy
2.	U24OE701B-MB	Engineering Finance
3.	U24OE701C-MB	Organisational Behaviour
4.	U24OE701D-MB	E-Commerce and Digital Marketing
5.	U24OE701Z-MB	Any other course approved by BoS Chair and Dean AA

@ List of courses for additional learning through MOOCs towards Honours/Minor in Engineering shall be prescribed by the department under Honours/ Minor Curricula

B. Tech Honours with Research

- (i). Students opting for B. Tech Honours with Research, shall complete Research Methodology Course (4 Credits) through MOOCs (OR) a workshop / FDP of not less than one week on "Research Methodologies" (4 Credits).
- (ii). Internship Evaluation for the students opting B. Tech Honours with Research, will be done on the 2-Month Research internship-II.

VIII SEMESTER(Stream - II)(URR24-R25)

S. No.	Category	Course Code	Course Title	Lectures / week				Credits
				L	T	P	E	C
1	PEC	U24CE801	Program Elective - III / MOOCs-III	2	1	-	3	3
2	PEC	U24CE802	Program Elective - IV / MOOCs-IV	2	1	-	3	3
3	PCC	U24CE803	Structural Health Monitoring	2	1	-	3	3
4	ELC	U24CE804	Major Project, Phase - 2 / Industrial Internship - 2	-	-	12	12	6
Total:				6	3	12	21	15
Additional Learning [@] :Maximum credits allowed for Honours/Minor				-	-	-	-	4
Total credits for Honours/Minor students:				-	-	-	-	19

@ List of courses for additional learning through MOOCs towards Honours/Minor in Engineering shall be prescribed by the department under Honours/ Minor Curricula

B. Tech Honours with Research

Students opting for B. Tech Honours with Research, shall Publish a research paper in reputed journal indexed by SCI/ SCOPUS/Web of Science (4 Credits).

SUMMARY

SEMESTER	I	II	III	IV	V	VI	VII	VIII	TOTAL
CREDITS FOR STREAM-II	22	19	21	20	21	20	22	15	160

PROGRAM ELECTIVE COURSES (PEC)

There are four slots allotted to Program Elective Courses (PECs). An example for CE is given below: Each major specialization of the B. Tech. Programme is treated as a vertical.

VERTICAL/ PE	PE1	PE2	PE3	PE4
Vertical 1: Structural Engineering	U24CE602A: Advanced Analysis of Structures	U24CE702A: Advanced Concrete Technology	U24CE801A: Repair & Rehabilitation of Structures	U24CE802A: Bridge Engineering
	(OR) Equivalent MOOC approved by BoS Chair and Dean AA			
Vertical 2: Transportation Engineering	U24CE602B: Traffic Engineering & Management	U24CE702B: Pavement Design	U24CE801B: Railway Engineering	U24CE802B: Highway Construction
	(OR) Equivalent MOOC approved by BoS Chair and Dean AA			
Vertical 3: Geotechnical Engineering	U24CE602C: Ground Improvement Techniques	U24CE702C: Earth Retaining Structures	U24CE801C: Soil Structure Interaction	U24CE802C: Soil Dynamics and Machine Foundation
	(OR) Equivalent MOOC approved by BoS Chair and Dean AA			
Vertical 4: Water & Environmental Engineering	U24CE602D: Watershed Management	U24CE702D: Hydraulic Structures	U24CE801D: Life Cycle Assessment	U24CE802D: Sustainable Materials and Green Buildings
	(OR) Equivalent MOOC approved by BoS Chair and Dean AA			
Vertical 5: Advanced Software	U24CE602E: Advanced Data Structures	U24CE702E: OOP through Java	U24CE801E: AIML applications in Civil Engineering	U24CE802E: Introduction to Data Bases
	(OR) Equivalent MOOC approved by BoS Chair and Dean AA			

S.NO.	CATEGORY	COURSE COMPONENT	TOTAL COURSES	TOTAL CREDITS	CURRICULUM CONTENT (%OF CREDITS)
1	HSMC	Humanity, Social Sciences and Management Courses	02	03	1.88
2	BSC	Basic Science Courses	06	17	10.63
3	ESC	Engineering Science Courses	08	18	11.25
4	PCC	Program Core Courses	34	78	48.75
5	PEC	Program Elective Courses	04	12	7.50
6	OE	Multidisciplinary Open Elective Courses	03	09	5.63
7	ELC	Experiential Learning Courses	06	14	8.75
8	IKSC	Indian Knowledge System Courses	03	04	2.50
9	VAC	Value Added Courses	04	03	1.88
10	SEC	Skill Enhancement Courses	00	00	0.00
11	AEC	Ability Enhancement Courses	02	02	1.25
Total			72	160	100

SEMESTER WISE COURSE / CREDIT DISTRIBUTION (URR24-R25)

Semester	Number of Courses / Number of Credits (Course Category wise) - Stream -II											TOTAL
	BSC	ESC	HSMC	PCC	OE	PEC	SEC	VAC	ELC	AEC	IKSC	
I	2/7	2/6	1/2	1/3	-	-	-	2/2	1/1	1/1	1/0	11/22
II	3/7	4/8	-	1/3	-	-	-	1/0	-	1/1	-	10/19
III	1/3	2/4	-	6/14	-	-	-	-	-	-	-	9/21
IV	-	-	-	9/19	-	-	-	1/1	-	-	-	10/20
V	-	-	-	7/15	1/3	-	-	-	1/1	-	1/2	10/21
VI	-	-	1/1	4/10	1/3	1/3	-	-	1/1	-	1/2	9/20
VII	-	-	-	5/11	1/3	1/3	-	-	2/5	-	-	9/22
VIII	-	-	-	1/3	-	2/6	-	-	1/6	-	-	4/15
Total	6/17	8/18	2/3	34/78	3/9	4/12	-	4/3	6/14	2/2	3/4	72/160
% Weightage of Course Category	10.63 % (17/160)	11.25 % (18/160)	1.88 % (3/160)	48.75 % (78/160)	5.63 % (9/160)	7.50 % (12/160)	0 % (0/160)	1.88 % (3/160)	8.75 % (14/160)	1.25 % (2/160)	2.50 % (4/160)	100 % (160/160)

* Seminar- 1 C , Mini Project- 1 C, Intership Evaluation-1 C, Major Project : 4+6

