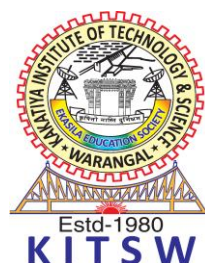


B.TECH. CURRICULUM
ACADEMIC YEAR:2024-25

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(INTERNET OF THINGS)

Undergraduate Rules and Regulations-2024 (URR24)
In accordance with the National Education Policy 2020
w.e.f AY 2024-25

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



KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE, WARANGAL – 506 015 TELANGANA
(UGC Autonomous Institute Under Kakatiya University, Warangal)

B. Tech (CSE(IOT)) -CURRICULUM(KITSW-URR24)
SEMESTER-WISE CURRICULUM WITH SCHEME OF INSTRUCTIONS

Abbreviations

L	Lecture Hours	O	Outside the Class Work (Self Study) Hours
T	Tutorial Hours	E	Total Engagement in Hours
P	Practical Hours	C	Credit Assigned

I SEMESTER

Stream - II

S. No.	Category	Course Code	Course Title	Lectures / week					Credits
				L	T	P	O	E	
-	IKSC	U24IK100	AICTE Mandated Student Induction Programme (Universal Human Values - I)						-
1	BSC	U24MH101	Differential Calculus and Ordinary Differential Equations	2	1	-	6	9	3
2	BSC	U24CY102B	Engineering Chemistry	2	1	2	5	10	4
3	ESC	U24CI111	Digital Logic Design	2	1	-	4	7	3
4	ESC	U24IN104	Programming for Problem Solving with C	2	1	2	5	10	4
5	HSMC	U24MH105	English Communication and Report Writing	2	-	-	3	5	2
6	VAC	U24VA106	Sports & Yoga	-	-	2	2	4	1
7	ESC	U24ME107	Engg. Graphics & CAD*	-	-	2	2	4	1
8	ELC	U24EL108	Practicum-I	-	-	-	4	4	1
9	VAC	U24VA109XXXXX	SEA - I/ SAA-I	-	-	-	2	2	1
10	AEC	U24AE110	Expert Talk Series-1	-	-	-	1	1	1
Total:				10	4	8	34	56	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)									

* For CE and ME, it will be a three (03) credit (1-0-4) course on Engineering Graphics & Design (Pedagogy: Sessions with conventional drafter and CAD). (For CE: U24CE107/U24CE207 and for ME: U24ME107A/U24ME207A)

Pool - III (Chemistry)		
S. No.	Course Code	Course Title
1.	U24CY102A	Engineering Chemistry (for Mechanical Engineering)
2.	U24CY102B	Engineering Chemistry (Common to CSM, CSD, CSN, CSO & IT)

II SEMESTER**Stream-II**

S. No.	Category	Course Code	Course Title	Lectures / week					Credits
				L	T	P	O	E	
1	BSC	U24MH201	Matrix Theory and Vector Calculus	2	1	-	6	9	3
2	BSC	U24PY202B	Engineering Physics	2	1	2	5	10	4
3	PCC	U24IN203	Computer Architecture and Organisation	2	1	-	4	7	3
4	ESC	U24IN204	Data Structures through C	2	1	2	5	10	4
5	ESC	U24EE205B	Basic Electrical Engineering	2	1	2	5	10	4
6	VAC	U24CY206	Environmental Studies	2	-	-	2	4	-
7	AEC	U24AE207	Idea Lab Makerspace	-	-	2	2	4	1
8	SEC	U24SE208	Programming Skill Development (PSD) Lab - 1	-	-	2	2	4	1
9	ELC	U24EL209	Practicum-2	-	-	-	4	4	1
10	VAC	U24VA210XXXXX	SEA-2/ SAA -2	-	-	-	2	2	1
11	AEC	U24AE211	Expert Talk Series-2	-	-	-	1	1	1
Total:				12	5	10	38	65	23
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)		
S. No.	Course Code	Course Title
1.	U24PY202A	Engineering Physics (for Mechanical Engineering)
2.	U24PY202B	Engineering Physics (Common to CSM, CSD, CSN, CSO & IT)

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

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 CSE(IOT))

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

Exit Options to Qualify for UG Certificate in CSE(IOT) : Any Two (02) Courses during the 2 - Months internship									
S. No	Category	Course Code	Course Title	L	T	P	O	E	C
1	PCC	U24IN212X	Arduino Programming	2	-	2	-	4	3
2	PCC	U24IN213X	Web Development	2	-	2	-	4	3
3	PCC	U24IN214X	Raspberry Pi Programming	2	-	2	-	4	3

(OR)

(ii) Any two suitable skill based courses to qualify for Certification.

Exit Options to Qualify for UG Certificate in CSE(IOT) : Any Two (02) Skill based Courses :-									
S. No	Category	Course Code	Course Title	L	T	P	O	E	C
1	SEC	U24SE215X	Programming with C++ Reference: https://trainings.internshala.com/c-plus-plus-course	-	-	6	-	6	3
2	SEC	U24SE216X	Advance Excel https://trainings.internshala.com/excel-course	-	-	6	-	6	3
3	SEC	U24SE217X	CISCO: IT Essentials Reference: Offered by CISCO CoE, KITSW	-	-	6	-	6	3
4	SEC	U24SE218X	CISCO: Introduction to Networks Reference: Offered by CISCO CoE, KITSW	-	-	6	-	6	3

III SEMESTER

S. No.	Category	Course Code	Course Title	Lectures / week					Credits
				L	T	P	O	E	
1	PCC	U24IN301	Fundamentals of IoT	2	1	2	5	10	4
2	PCC	U24IN302	Operating Systems	2	1	-	4	7	3
3	PCC	U24IN303	Advanced Data Structures	2	1	2	5	10	4
4	PCC	U24IN304	Computer Networks	2	1	-	4	7	3
5	PCC	U24IN305	OOP through Java	2	1	2	5	10	4
6	VAC	U24VA306B	Soft and Interpersonal Skills	-	-	2	2	4	1
7	SEC	U24SE307	PSD Lab-02	-	-	2	2	4	1
8	ELC	U24EL308	Practicum-3	-	-	-	4	4	1
9	VAC	U24VA309XXXXX	SEA-3 / SAA -3	-	-	-	2	2	1
10	AEC	U24AE310	Expert Talk Series-3	-	-	-	1	1	1
Total:				10	5	10	34	59	23
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)									

@ Dean AA will allot the courses QALR (Stream-I), Soft & Interpersonal Skills (Stream-II), to the branches as per Stream-I and Stream-II.

IV SEMESTER

S. No.	Category	Course Code	Course Title	Lectures / week				Credits
				L	T	P	E	
1	BSC	U24MH401D	Discrete Mathematics and Probability, Statistics	2	1	-	3	3
2	PCC	U24IN402	Web Technologies	2	1	-	3	3
3	PCC	U24IN403	Database Management Systems	2	1	-	3	3
4	PCC	U24IN404	IoT Architectures and Protocols	2	1	-	3	3
5	PCC	U24IN405	Python Programming for IoT	2	1		3	3
6	VAC	U24VA406A	Quantitative Aptitude and Logical Reasoning	2	-	-	2	2
7	SEC	U24SE407	Programming ad Skill Development Laboratory	-	-	2	2	1
8	ELC	U24IN408	Web Technologies Laboratory	-	-	2	2	1
9	VAC	U24IN409	Database Management Systems Laboratory	-	-	2	2	1
10	AEC	U24AE410	Python Programming for IoT Laboratory	-	-	2	2	1
11	VAC*	U24CH411*	Environmental Studies*	2*	-	-	2*	-
Total:				12	5	8	2	21
Summer/ Inter-semBridge 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				

*For Lateral Entry Students Only

* Branch Specific Mathematics:

Branch Specific Mathematics (Pool-4)			
S. No.	Course Code	Course Title	Common to
1.	U24MH401A	Numerical and Statistical Methods	CE
2.	U24MH401B	Applied Mathematics for Mechanical Engineering	ME
3.	U24MH401C	Applied Mathematics	EEE, ECE, ECI
4.	U24MH401D	Discrete Mathematics and Probability, Statistics	CSE, IT,CSN,CSO
5.	U24MH401E	Essential Mathematics and Statistics for Machine learning	CSM
6.	U24MH401F	Essential Mathematics and Statistics for Data science	CSD
7.	U24MH401X	Any other Course approved by BoS chair and Dean AA	-

@ Dean AA will allot the courses QALR (Stream-I), Soft and Interpersonal Skills (Stream-II), to the branches as per Stream-I and Stream-II.

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 CSE(IOT))

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

Exit Options to Qualify for UG Diploma in CSE(IOT) : Any Two (02) Courses during the 2 - Months internship									
S. No.	Category	Course Code	Course Title	L	T	P	O	E	C
1	PCC	U24IN412X	Fundamentals of Algorithms	2	-	2	-	4	3
2	PCC	U24IN413X	Machine Learning for IoT	2	-	2	-	4	3
3	PCC	U24IN414X	Fundamentals of DevOps	2	-	2	-	4	3

(OR)

(ii) Any two suitable skill based courses to qualify for Diploma.

Exit Options to Qualify for UG Diploma in CSE(IOT) : Any Two (02) Skill based Courses -:									
S. No.	Category	Course Code	Course Title	L	T	P	O	E	C
1	SEC	U24SE412X	Drone Pilot Reference: https://agnipathvayu.cdac.in	-	-	6	-	6	3
2	SEC	U24SE413X	CISCO: Switching Routing and Wireless Essentials Reference: Offered by CISCO CoE, KITSW	-	-	6	-	6	3
3	SEC	U24SE414X	Graphic Design Reference: https://trainings.internshala.com/graphic-design-course	-	-	6	-	6	3
4	SEC	U24SE415X	Android App Development Reference: https://trainings.internshala.com/android-course/	-	-	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

S. No.	Category	Course Code	Course Title	Lectures / week				Credits
				L	T	P	E	
1	OE	U24OE501X-SDGB	Open Elective -SDGB (Pool - XVI)	2	1	-	3	3
2	PCC	U24IN502	Artificial Internet of Things	2	1	-	3	3
3	PCC	U24IN503	Automata Theory and Compiler Design	2	1	-	3	3
4	PCC	U24IN504	Design and Analysis of Algorithms	2	1	-	3	3
5	PCC	U24IN505	Software Engineering	2	1	-	3	3
6	IKSC	U24IK506B	Essence of Indian Traditional Knowledge	2	-	-	2	2
7	SEC	U24IN507	FullStack Development Laboratory	-	-	2	2	1
8	PCC	U24IN508	Artificial Internet of Things Laboratory	-	-	2	2	1
9	PCC	U24IN509	Design and Analysis of Algorithms Laboratory	-	-	2	2	1
10	ELC	U24IN510	Seminar			2	2	1
Total:				12	5	8	25	21

Pool - XVI
Sustainable Development Goals Basket (OE - SDGB)

S. No.	Course Code	Course Title
1.	U24OE501A-SD	Cloud Computing (Offered by CSE)
2.	U24OE501B-SD	AI Ethics (Offered by CSE (AI & ML))
3.	U24OE501C-SD	Sustainable AI (Offered by CSE (AI & ML))
4.	U24OE501D-SD	Any other course approved by BoS Chair and Dean AA

VI SEMESTER (STREAM-II)

S. No.	Category	Course Code	Course Title	Lectures / week				Credits
				L	T	P	E	
1	OE	U24OE601X -SE&B	Open Elective - S&EB(from Pool -XVIII)	2	1	-	3	3
2	PEC	U24IN602X	Program Elective -I / MOOCs-I	2	1	-	3	3
3	PCC	U24IN603	IoT Frameworks	2	1	-	3	3
4	PCC	U24IN604	Industrial IoT	2	1	-	3	3
5	PCC	U24IN605	DevOps	2	1	-	3	3
6	IKSC	U24IK606A	Universal Human Values - II	2	-	-	2	2
7	HSMC	U24MH607	Technical English	-	-	2	2	1
8	PCC	U24IN608	IoT Frameworks Laboratory	-	-	2	2	1
9	PCC	U24IN609	Industrial IoT Laboratory	-	-	2	2	1
10	PCC	U24IN610	DevOps Laboratory	-	-	2	2	1
11	ELC	U24IN611	Mini Project	-	-	2	2	1
Total:				12	5	10	27	22
Additional Learning@:Maximum credits allowed for Honours/Minor				-	-	-	-	5
Total credits for Honours/Minor students:				-	-	-	-	27
Summer/ Inter-semBridge 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 -XVIII Startups & Entrepreneurship Basket (OE - S&EB)		
S. No.	Course Code	Course Title
1.	U24OE601A-SEB	Design Thinking
2.	U24OE601B-SEB	Innovative Product Design and Development
3.	U24OE601C-SEB	Entrepreneurship
4.	U24OE601D-SEB	Design Studio
5.	U24OE601Z-SEB	Any other course approved by BoS Chair and Dean AA

Program Elective -I/ MOOCs-I		
S. No.	Course Code	Course Title
1.	U24IN602A	Deep Learning
2.	U24IN602B	Fundamentals of Cyber Security and Tools
3.	U24IN602C	Statistical Fundamentals

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 CSE (IOT))

(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 CSE (IOT): Any Two (02) Courses during the 2 - Months internship

S. No.	Category	Course Code	Course Title	L	T	P	E	C
1	PCC	U24IN612X	Qiskit Programming	2	-	2	4	3
2	PCC	U24IN613X	IoT Security	2	-	2	4	3
3	PCC	U24IN614X	Prompt Engineering	2	-	2	4	3
4	PCC	U24IN615X	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 CSE (IOT) Degree.

Exit Option to Qualify B. Voc in CSE (IOT): Any Two (02) Skill based Courses -:

S. No.	Category	Course Code	Course Title	L	T	P	E	C
1	SEC	U24SE616X	Android Application Development Reference: https://nsdcindia.org/telecom-terminal-equipment-application-developer-android-application	-	-	6	6	3
2	SEC	U24SE617X	Big Data & Hadoop Reference: https://onlinecourses.nptel.ac.in/noc20_cs92/preview	-	-	6	6	3
3	SEC	U24SE618X	Software Testing Tools and Selenium Reference: https://www.careerpedia.co/software-testing-course-hyderabad	-	-	6	6	3
4	SEC	U24SE619X	Digital Marketing Reference: https://trainings.internshala.com/digital-marketing-course	-	-	6	6	3
5	SEC	U24SE620X	CISCO: Enterprise Networking, Security & Automation Reference: Offered by CISCO CoE, KITSW	-	-	6	6	3
6	SEC	U24SE621X	Business Analytics Reference: https://trainings.internshala.com/business-analytics-course	-	-	6	6	3
7	SEC	U24SE622X	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 covering GATE syllabus).

VII SEMESTER (STREAM -II)

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	U24IN702	Program Elective - II/ MOOCs-II	2	1	-	3	3
3	PCC	U24IN703	Privacy and Security in IoT	2	1		3	3
4	PCC	U24IN704	Fundamentals of Quantum Computing	2	1	-	3	3
5	PCC	U24IN705	Drone Systems and Control	2	1	-	3	3
6	PCC	U24IN706	Fundamentals of Quantum Computing Laboratory	-	-	2	2	1
7	ELC	U24IN707	Internship Evaluation	-	-	2	2	1
8	ELC	U24IN708	Major Project Phase-1 / Industrial Internship -1	-	-	8	8	4
Total:				10	5	12	27	21
Additional Learning@:Maximum credits allowed for Honours/Minor				-	-	-	-	4
Total credits for Honours/Minor students:				-	-	-	-	25

Pool -XX 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

- 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).
- Internship Evaluation for the students opting B. Tech Honours with Research, will be done on the 2-Month Research internship-II.

Program Elective -II/MOOCs=II		
S. No.	Course Code	Course Title
1.	U24IN702A	Natural Language Processing
2.	U24IN702B	Platforms and Systems Security
3.	U24IN702C	Principles of Data Science

VIII SEMESTER

S. No.	Category	Course Code	Course Title	Lectures / week				Credits
				L	T	P	E	C
1	PEC	U24IN801	Program Elective - III / MOOCs-III	2	1	-	3	3
2	PEC	U24IN802	Program Elective - IV / MOOCs-IV	2	1	-	3	3
3	PCC	U24IN803	Cyber Physical Systems	2	1	-	3	3
4	ELC	U24IN804	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).

Program Elective -III/MOOC-III		
S. No.	Course Code	Course Title
1.	U24IN801A	Prompt Engineering for Generative AI
2.	U24IN801B	Blockchain Technology
3.	U24IN801C	Data Mining and Data Warehousing

Program Elective -IV/ MOOC-IV		
S. No.	Course Code	Course Title
1.	U24IN802A	Reinforcement Learning
2.	U24IN802B	Ethical Hacking
3.	U24IN802C	R Programming for DataScience

SUMMARY

SEMESTER	I	II	III	IV	V	VI	VII	VIII	TOTAL
CREDITS FOR STREAM-II	21	23	23	21	21	22	21	15	167

PROGRAM ELECTIVE COURSES (PEC)

There are four slots allotted to Program Elective Courses (PECs).

VERTICAL / PROFESSIONAL ELECTIVE	PROFESSIONAL ELECTIVE1 (PE1)	PROFESSIONAL ELECTIVE1 (PE2)	PROFESSIONAL ELECTIVE1 (PE3)	PROFESSIONAL ELECTIVE1 (PE4)
VERTICAL 1: AI & ML	U24IN602A: Deep Learning	U24IN702A: Natural Language Processing	U24IN801A: Prompt Engineering for Generative AI	U24IN802A: Reinforcement Learning
	(OR)			
	<i>Equivalent MOOC approved by BoS Chair and Dean AA</i>			
VERTICAL 2: Cyber Security	U24IN602B: Fundamentals of Cyber Security and Tools	U24IN702B: Platforms and Systems Security	U24IN801B: Blockchain Technology	U24IN802B: Ethical Hacking
	(OR)			
	<i>Equivalent MOOC approved by BoS Chair and Dean AA</i>			
VERTICAL 3: Data Science	U24IN602C: Statistical Fundamentals	U24IN702C: Principles of Data Science	U24IN801C: Data Mining and Data Warehousing	U24IN802C: R Programming for Data Science
	(OR)			
	<i>Equivalent MOOC approved by BoS Chair and Dean AA</i>			