

# **USHARAMA**

## **COLLEGE OF ENGINEERING AND TECHNOLOGY**

(Approved by A.I.C.T.E & Permanently Affiliated to JNTU, Kakinada)

Accredited by NAAC with "A" Grade  
on NH 16, Telaprolu, Krishna Dist – 521109

### **B.TECH**

### **COMPUTER SCIENCE ENGINEERING**

### **COURSE STRUCTURE**

**&**

### **SYLLABUS**

# **UR23**

**(Applicable for the batches admitted from the Academic Year 2023-24)**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**COURSE STRUCTURE**  
(Applicable for batches admitted from 2023-2024)

**B.Tech - I Year - I Semester**

S.No.	Course Category	Course Title	L	T	P	Contact Hrs./Wk	C
1	BS&H	Communicative English	2	0	0	2	2
2	BS&H	Chemistry	3	0	0	3	3
3	BS&H	Linear Algebra & Calculus	3	0	0	3	3
4	ES	Basic Civil & Mechanical Engineering	3	0	0	3	3
5	ES	Introduction to Programming	3	0	0	3	3
6	BS&H	Communicative English Lab	0	0	2	2	1
7	BS&H	Chemistry Lab	0	0	2	2	1
8	ES	Engineering Workshop Lab	0	0	3	3	1.5
9	ES	Computer Programming Lab	0	0	3	3	1.5
10	BS&H	Health and Wellness, Yoga and Sports	0	0	1	1	0.5
<b>Total</b>			<b>14</b>	<b>0</b>	<b>11</b>	<b>25</b>	<b>19.5</b>

**B.Tech - I Year - II Semester**

S.No.	Course Category	Course Title	L	T	P	Contact Hrs./Wk	C
1	BS	Engineering Physics	3	0	0	3	3
2	ES	Basic Electrical and Electronics Engineering	3	0	0	3	3
3	BS	Differential Equations & Vector Calculus	3	0	0	3	3
4	PC	Data Structures	3	0	0	3	3
5	ES	Engineering Graphics	1	0	4	5	3
6	BS	Engineering Physics Lab	0	0	2	3	1
7	ES	Electrical and Electronics Engineering Workshop	0	0	3	3	1.5
8	ES	IT Workshop	0	0	3	3	1
9	PC	Data Structures Lab	0	0	3	3	1.5
10	BS&H	NSS/NCC/Scouts & Guides/Community Service	0	0	1	1	0.5
<b>Total</b>			<b>13</b>	<b>0</b>	<b>15</b>	<b>28</b>	<b>20.5</b>

<b>B.Tech - II Year - I Semester</b>							
<b>S.No.</b>	<b>Course Category</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Contact Hrs./Wk</b>	<b>C</b>
1	BS	Discrete Mathematics & Graph Theory	3	0	0	3	3
2	HSMC	Universal Human Values 2-Understanding Harmony & Human Ethical Conduct	2	1	0	3	3
3	ES	Digital Logic & Computer Organisation	3	0	0	3	3
4	PC	Data Base Management System	3	0	0	3	3
5	PC	Object Oriented Programming Through Java	3	0	0	3	3
6	PC	Data Base Management and System Lab	0	0	3	3	1.5
7	PC	Object Oriented Programming Through Java Lab	0	0	3	3	1.5
8	SEC	Python programming	0	1	2	3	2
<b>Total</b>			<b>14</b>	<b>2</b>	<b>8</b>	<b>24</b>	<b>20</b>

<b>B.Tech - II Year - II Semester</b>							
<b>S.No.</b>	<b>Course Category</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Contact Hrs./Wk</b>	<b>C</b>
1	Management Course-I	Managerial Economics and Financial Analysis	2	0	0	2	2
2	ES	Probability & Statistics	3	0	0	3	3
3	PC	Data Warehousing and Data Mining	3	0	0	3	3
4	PC	Operating System	3	0	0	3	3
5	PC	Software Engineering	2	1	0	3	3
6	PC	Data Warehousing and Data Mining Lab	0	0	3	3	1.5
7	PC	Operating System Lab	0	0	3	3	1.5
8	SEC	Full Stack Development -1	0	1	2	3	2
9	BS&H	Design Thinking & Innovation	1	0	2	3	2
<b>Total</b>			<b>16</b>	<b>2</b>	<b>10</b>	<b>28</b>	<b>21</b>
<b>MANDATORY COURSE</b>							
10	Audit Course	Environmental Science	0	0	0	2	0
<b>Mandatory Community Service Project Internship of 08weeks duration during summer Vacation</b>							

**B.Tech - III Year - I Semester**

<b>S.No.</b>	<b>Course Category</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Contact Hrs./Wk</b>	<b>C</b>
1	PC	Machine Learning	3	0	0	3	3
2	PC	Computer Networks	3	0	0	3	3
3	PC	Formal Languages and Automata Theory	3	0	0	3	3
4	PE-I	1.Object Oriented Analysis and Design 2.Artificial Intelligence 3.Microprocessors & Microcontrollers 4. Advanced Data Structures & Algorithm Analysis 5.12 week MOOC Swayam/NPTEL Course recommended by the BoS	3	0	0	3	3
5	OE-I	Open Elective-I	3	0	0	3	3
6	PC	Machine Learning Lab	0	0	3	3	1.5
7	PC	Computer Networks Lab	0	0	3	3	1.5
8	SEC	Full Stack Development -II	0	0	2	3	2
9	ES	User Interface Design using Flutter / SWAYAM Plus - Android Application Development (with Flutter)	0	0	2	2	1
10	PROJ	Evaluation of Community Service Internship	0	0	0	0	2
<b>Total</b>			<b>15</b>	<b>0</b>	<b>10</b>	<b>26</b>	<b>23</b>
11	MD	Minor Course (Student may select from the same specialized minors pool)	3	0	0	3	3
12	MD	Minor Course through SWAYAM/NPTEL (minimum 12 week, 3 credit course)	3	0	0	3	3

<b>B.Tech - III Year - II Semester</b>							
<b>S.No.</b>	<b>Course Category</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Contact Hrs./Wk</b>	<b>C</b>
1	PC	Compiler Design	3	0	0	3	3
2	PC	Cloud Computing	3	0	0	3	3
3	PC	Cryptography & Network Security	3	0	0	3	3
4	PE-II	1. Software Testing Methodologies 2. Cyber Security 3. DevOps 4. Quantum Computing 5. 12-Week MOOC SWAYAM /NPTEL course recommended by the BoS	3	0	0	3	3
5	PE-III	1. Software Project Management 2. Mobile Adhoc Networks 3. Natural Language Processing 4. Distributed Operating System 5. 12-Week MOOC SWAYAM /NPTEL course recommended by the BoS	3	0	0	3	3
6	OE-II	Open Elective-II	3	0	0	3	3
7	PC	Cloud Computing Lab	0	0	3	3	1.5
8	PC	Cryptography & Network Security Lab	0	0	3	3	1.5
9	Skill Enhancement Course	Soft skills OR IELTS	1	0	2	3	2
<b>Total</b>			<b>19</b>	<b>0</b>	<b>8</b>	<b>27</b>	<b>23</b>
<b>MANDATORY COURSE</b>							
10	Audit Course /MC	Technical Paper Writing & IPR	0	0	0	2	0
<b>*Mandatory Industry Internship of 08 weeks duration during summer vacation</b>							
11	MD	Minor Course (Student may select from the same specialized minors pool)	3	0	3	3	4.5

\* Under Industry Internship interested students can pursue SWAYAM Plus courses viz., Hands-on Masterclass on Data Analytics OR Artificial Intelligence for Real-World Application

<b>B.Tech - IV Year - I Semester</b>							
<b>S.No.</b>	<b>Course Category</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Contact Hrs./Wk</b>	<b>C</b>
1	PC	Deep Learning	2	1	0	3	3
2	HMC	Human Resource Management	2	0	0	3	2
3	PE-IV	1. Software Architecture & Design Patterns 2. Blockchain Technology 3. Augmented Reality & Virtual Reality 4. Internet of Things 5. 12 week MOOC Swayam/NPTEL Course Recommended by the BoS	3	0	0	3	3
4	PE-V	1. Agile methodologies 2. Metaverse 3. Computer Vision 4. Cyber Physical Systems 5. 12 week MOOC Swayam/NPTEL Course Recommended by the BoS	3	0	0	3	3
5	OE-III	Open Elective-III	3	0	0	3	3
6	OE-IV	Open Elective-IV	3	0	0	3	3
7	Skill Enhancement Course	Prompt Engineering/SWAYAM Plus - Certificate program in Prompt Engineering and ChatGPT	0	0	2	3	2
8	Internship	Evaluation of Industry Internship	0	0	0	0	2
<b>Total</b>			<b>16</b>	<b>1</b>	<b>2</b>	<b>21</b>	<b>21</b>
<b>MANDATORY COURSE</b>							
9	Audit Course /MC	Constitution of India	0	0	0	3	0
<b>Minor Course</b>							
10	MD	Minor Course (Student may select from the same specialized minors pool)	3	0	0	3	3

<b>B.Tech - IV Year - II Semester</b>							
<b>S.No.</b>	<b>Course Category</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Contact Hrs./Wk</b>	<b>C</b>
<b>1</b>	Internships & Project Work	Full Semester Internship & Project Work	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>
<b>TOTAL</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>

**Note:** Student need to do at least ONE MOOC Course (of 3 credits out of 160 credits) to meet the mandatory requirement (11th criteria, as per UR23 Regulations) *they are allowed to register one semester in advance*