Jawaharlal Nehru Technological University Anantapur College of Engineering Pulivendula –516 390 (A.P) India

B.Tech. in Computer Science and Engineering Course Structure and Syllabi under R19 Regulations

COMPUTER SCIENCE & ENGINEERING

S.No	Course Name	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 Modules & 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

B.Tech I Year I Semester

Semester - 1					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19ABS06	Linear Algebra and Calculus	BS	3-1-0	4
2	19ABS03	Chemistry	BS	3-0-0	3
3	19ACS01	Problem Solving & Programming	ES	3-1-0	4
4	19AME01	Engineering Graphics	ES	1-0-3	2.5
5	19AME02	Engineering Workshop	LC	0-0-3	1.5
6	19ABS04	Chemistry Lab	BS	0-0-3	1.5
7	19ACS02	Problem Solving & Programming Lab	ES	0-0-3	1.5
				Total	18

B.Tech I Year II Semester

Semester – 2					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19ABEE01	Basic Electrical and Electronics Engineering	ES	3-0-0	3
2	19ABS07	Differential Equations and Vector Calculus	BS	3-1-0	4
3	19ABS09	Applied Physics	BS	3-0-0	3
4	19ACS05	Data Structures	ES	3-0-0	3
5	19AHS01	Communicative English – I	HS	2-0-0	2
6	19ACS07	Computer Science and Engineering Workshop	LC	0-0-2	1
7	19AHS02	Communicative English - I Lab	HS	0-0-2	1
8	19ABEE02	Basic Electrical & Electronics Engineering Lab	ES	0-0-3	1.5
9	19ABS10	Applied Physics Lab	BS	0-0-3	1.5
10	19ACS06	Data Structures Lab	ES	0-0-3	1.5
				Total	21.5

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B.Tech II Year I Semester

Semester – 3

S. No	Course No	Course Name	Category	L-T-P	Credits
1	19ABS13	Discrete Mathematics	BS	3-0-0	3
2	19ACS08	Database Management Systems	ES	3-0-0	3
3	19ACS10	Formal Languages and Automata Theory	ES	3-0-0	3
4	19ACS11	Design and Analysis of Algorithms	PC	3-0-0	3
5	19ACS13	Digital Logic Design	PC	3-0-0	2
6	19ACS14	Object Oriented Programming Concepts and Java Programming	PC	2-0-0	2
7	19ACS12	Design Thinking & Product Innovation Lab	PC	0-0-3	1.5
8	19ACS09	Database Management Systems Lab	ES	0-0-3	1.5
9	19ACS15	Object Oriented Programming Lab	PC	0-0-3	1.5
10	19ACS16	Free and Open-Source Software Lab	PC	0-0-2	1
11	19AHS04	Constitution of India	MC	3-0-0	0
		Total			**21.5**

B.Tech II Year II Semester

Semester – 4

S.No	Course No	Course Name	Category	L-T-P	Credits
1	19ABS15	Numerical Methods, Probability & Statistics	BS	3-0-0	3
2	19ACS20	Compiler Design	PC	3-0-0	3
3	19ACS21	Computer Organization	ES	3-0-0	3
4	19ACS25	Operating Systems	PC	3-0-0	3
5	19ACS23	Software Engineering	PC	3-0-0	3
6	19ACS26	Computer Networks	ES	3-0-0	3
7	19ACS27	Computer Networks and Operating Systems Lab	PC	0-0-3	1.5
8	19ACS24	Software Engineering Lab	ES	0-0-2	1
9	19ACS22	Computer Organization Lab	ES	0-0-2	1
10	19ABS14	Environmental Science	MC	3-0-0	0
11	19AHS03	Universal Human Values	MC	2-0-0	2
		Total			**23.5**

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S.No	Course No	Course Name	Category	L-T-P	Credits
6 Semester – 5

S.No	Course No	Course Name	Category	L-T-P	Credits
1	19AHS12	English Language Skills	HS	2-0-0	2
2	19ACS51	Internet of Things (IOT)	PC	3-0-0	3
3	19ACS52	Object Oriented Analysis, Design and Testing	PC	3-0-0	3
5	19ACS53	Data Mining	PC	2-0-0	2
4	19ACS54	Professional Elective I	PE	3-0-0	3
	19ACS54a	Computer Graphics			
	19ACS54b	Software Project Management			
	19ACS54c	Web Technologies			
6	19ACS55	Open Elective - I(Inter disciplinary) - **ANNEXURE-I**	OE	3-0-0	3
7	19ACS56	Internet of Things(IOT) Lab	PC	0-0-2	1
8	19AHS13	English Language Skills Lab	HS	0-0-3	1.5
9	19ACS57	Data Mining Lab	PC	0-0-2	1
10	19ACS58	Object Oriented Analysis, Design and Testing Lab	PC	0-0-2	1
11	19ACS59	Socially Relevant Projects (30 hours/sem)	PR	- - -	1
12	19AHS17	Research Methodology	MC	3-0-0	0
				Total :	**21.5**

B.Tech III Year II Semester

S.No	Course No	Course Name	Category	L-T-P	Credits
6 Semester - 6

S.No	Course No	Course Name	Category	L-T-P	Credits
1	19ACS61	Machine Learning	PC	4-0-0	4
2	19ACS62	Big data Analytics	PC	3-0-0	3
3	19ACS63	Cyber Security	PC	3-0-0	3
4	19ACS64	Professional Elective II	PE	3-0-0	3
	19ACS64a	Scripting Languages			
	19ACS64b	Mobile Computing			
	19ACS64c	Software Architecture			
5	19ACS65	Open Elective-II (Inter Disciplinary)- **ANNEXURE-II**	OE	3-0-0	3
6	19AHS14	Humanities Elective I	HS	3-0-0	3
	19AHS14a	MEFA			
	19AHS14b	Entrepreneurship & Innovation Management			
7	19ACS66	Cyber Security Lab	PC	0-0-2	1
8	19ACS67	Machine Learning Lab	PC	0-0-3	1.5
9	19AHS16	Organizational Behaviors	MC	3-0-0	0
10	Industrial Training/Internship/Research Projects in National Laboratories/Academic Institutions		PR	4 Weeks Summer Internship	
				Total	**21.5**

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B.Tech IV Year I Semester

Semester - 7					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19ACS71	Cloud Computing	PC	3-0-0	3
2	19ACS72	Devops	PC	2-0-0	2
3	19ACS74	Professional Elective III	PE	3-0-0	3
	19ACS74a	Human Computer Interaction			
	19ACS74b	Data Science			
	19ACS74c	Multimedia and Application Development			
4	19ACS76	Professional Elective IV	PE	3-0-0	3
	19ACS76a	Natural Language Processing			
	19ACS76b	Software Testing Methodologies			
	19ACS76c	Adhoc Sensor Networks			
5	19ACS75	Open Elective -III - **ANNEXURE-III**	OE	2-0-0	2
6	19AHS15	Humanities Elective II	HS	3-0-0	3
	19AHS15a	Management Science			
	19AHS15b	Business Environment			
7	19ACS77	Cloud Computing Lab	PC	0-0-1	1
8	19ACS73	DevOps Lab	PC	0-0-2	1.5
9	19ACS78	Industrial Training/Internship/Research Projects in National Laboratories/Academic Institutions	PR	---------	2
10	19ACS79	Project Stage –I	PR	------	2
				Total	**22.5**

B.Tech IV Year II Semester

Semester - 8					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19ACS81	Professional Elective V (MOOC)	PE	3-0-0	3
2	19ACS82	Open Elective IV (MOOC)	OE	3-0-0	3
3	19ACS99	Project Stage –II	PR	--------	6
					12

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ANNEXURE – I
Open Elective I (Interdisciplinary)

Branch	Subject Code	Subject
Humanities	19AHS10	Campus Recruitment Training & Soft Skills
Mathematics	19ABS20	Mathematical Modeling
	19ABS21	Fuzzy Set Theory, Arithmetic and Logic
	19ABS22	Number Theory
Physics	19ABS31	Sensors and Actuators for Engineering Applications
	19ABS32	Physics of Electronic Materials
Chemistry	19ABS41	Chemistry of Energy Materials
	19ABS42	Advanced Polymers and Their Applications
	19ABS43	Marine Chemistry
CIVIL	19ACE55a	Air Pollution and Control
	19ACE55b	Green Buildings
	19ACE55c	Basics of Civil Engineering Materials and Construction Practice
EEE	19AEE55a	Basics of Non-Conventional Energy Sources
	19AEE55b	Electrical Measurements & Sensors
	19AEE55c	Electric Vehicle Engineering
ME	19AME55a	Introduction to Hybrid and Electric Vehicles
	19AME55b	Rapid Prototyping
	19AME55c	Design for Manufacturing and Assembly
	19AME55d	Power Plant Operation and Control
	19AME55e	Smart Materials
	19AME55f	Supply Chain Management
ECE	19AEC55a	Fundamentals of Electronics and Communication Engineering
	19AEC55b	Transducers and Sensors
	19AEC55c	Principles of Communications

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ANNEXURE – II
Open Elective II (Interdisciplinary)

Branch	Subject Code	Subject Name
Humanities	19AHS11	Competitive &Spoken English
Mathematics	19ABS23	Integral Transforms And ITS Applications
	19ABS24	Numerical Analysis
	19ABS25	Optimization Techniques
Physics	19ABS33	Functional Nanomaterials For Engineers
	19ABS34	Materials Characterization Techniques
Chemistry	19ABS44	Green Chemistry and Catalysis for Sustainable Environment
	19ABS45	Chemistry of Nanomaterials and Applications
	19ABS46	Environmental Management and Audit
EEE	19AEE65a	Energy Conservation and Management
	19AEE65b	PLC & ITS Applications
	19AEE65c	System Reliability Concepts
CIVIL	19ACE65a	Remote Sensing and GIS
	19ACE65b	Environmental Impact Assessment
	19ACE65c	Disaster Management and Mitigation
ME	19AME65a	Automobile Electronics, Sensors & Drives
	19AME65b	Programming of Robots and Control
	19AME65c	Sensors in Intelligent Manufacturing
	19AME65d	Non-Conventional Sources of Energy
	19AME65e	NEMS & MEMS
	19AME65f	Optimization Techniques Through MAT lab
ECE	19AEC65a	Introduction to Microcontrollers & Applications
	19AEC65b	Principles of Digital Signal Processing
	19AEC65c	Introduction to Image Processing

ANNEXURE – III Open Elective III

Branch	Subject Code	Subject Name
CIVIL	19ACE75a	Architecture and town planning
	19ACE75b	Experimental stress analysis
	19ACE75c	Finite element methods
EEE	19AEE75a	Electrical engineering materials
	19AEE75b	Digital signal processors and applications
	19AEE75c	IOT applications in electrical engineering
ME	19AME75a	Special types of vehicles
	19AME75b	Six sigma and lean manufacturing
	19AME75c	Reverse engineering
	19AME75d	Energy auditing
	19AME75e	Introduction to composite materials
	19AME75f	Customer relationship management
ECE	19AEC75a	Embedded systems & IOT
	19AEC75b	Electronic instrumentation
	19AEC75c	Basics of VLSI design
CSE	19ACS75a	Mobile application development
	19ACS75b	Real time operating systems and applications
	19ACS75c	Fundamentals of block chain and applications

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