

1.2.2 - CSE-File-2

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, TIRUPATI
(AUTONOMOUS)
COMPUTER SCIENCE AND ENGINEERING (CSE)
(Effective for the batches admitted in 2020-21)**

Semester I (First year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	BS	20ABS9901	Algebra & Calculus	3	0	0	3	30	70	100
2	BS	20ABS9904	Chemistry	3	0	0	3	30	70	100
3	ES	20AES0501	Problem Solving and Programming	3	0	0	3	30	70	100
4	ES	20AES0301	Engineering Graphics	1	0	4	3	30	70	100
5	ES	20AES0505	Information Technology and Numerical Methods	3	0	0	3	30	70	100
6	ES LAB	20AES0506	Computer Science and Engineering Workshop	0	0	3	1.5	30	70	100
7	BS LAB	20ABS9909	Chemistry Lab	0	0	3	1.5	30	70	100
8	ES LAB	20AES0503	Problem Solving and Programming Lab	0	0	3	1.5	30	70	100
Total credits							19.5	240	560	800

Semester II (First year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	BS	20ABS9902	Applied Physics	3	0	0	3	30	70	100
2	BS	20ABS9911	Probability and Statistics	3	0	0	3	30	70	100
3	HS	20AHS9901	Communicative English	3	0	0	3	30	70	100
4	ES	20AES0502	Data Structures	3	0	0	3	30	70	100
5	ES	20AES0507	Web Design	1	0	4	3	30	70	100
6	HS LAB	20AHS9902	Communicative English Lab	0	0	3	1.5	30	70	100
7	BS LAB	20ABS9907	Applied Physics Lab	0	0	3	1.5	30	70	100
8	ES LAB	20AES0504	Data Structures Lab	0	0	3	1.5	30	70	100
9	MC	20AMC9903	Environmental Studies	2	0	0	0	30	0	30
Total credits							19.5	270	560	830


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Semester III (Second year) - AK20

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	BS	20ABS9914	Discrete Mathematical Structures	3	0	0	3	30	70	100
2	PC	20APC0503	Digital Electronics & Microprocessors	3	0	0	3	30	70	100
3	PC	20APC0502	Database Management Systems	3	0	0	3	30	70	100
4	PC	20APC0526	Basics of Python Programming	3	0	0	3	30	70	100
5	ES	20AES0205	Basics of Electrical and Electronics Engineering	3	0	0	3	30	70	100
6	PC Lab	20APC0505	Database Management Systems Lab	0	0	3	1.5	30	70	100
7	PC Lab	20APC0527	Basics of Python Programming Lab	0	0	3	1.5	30	70	100
8	ES Lab	20AES0206	Basics of Electrical and Electronics Engineering Lab	0	0	3	1.5	30	70	100
9	SC	20ASC0501	Client Side Scripting	1	0	2	2	100	0	100
10	MC	20AMC9902	Constitution of India	2	0	0	0	30	0	30
Total credits							21.5	370	560	930

Semester IV (Second year) - AK20

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	PC	20APC0506	Computer Organization	3	0	0	3	30	70	100
2	PC	20APC0511	Design And Analysis Of Algorithms	3	0	0	3	30	70	100
3	PC	20APC0512	Object Oriented Programming through Java	3	0	0	3	30	70	100
4	PC	20APC0515	Operating Systems	3	0	0	3	30	70	100
5	HS	20AHSMB01	Managerial Economics and Financial Analysis	3	0	0	3	30	70	100
6	HS	20AHS9905	Universal Human Values	3	0	0	3	30	70	100
7	PC Lab	20APC0504	Computer Organization Lab	0	0	2	1	30	70	100
8	PC Lab	20APC0514	Object Oriented Programming through Java Lab	0	0	4	2	30	70	100
9	PC Lab	20APC0513	Operating Systems Lab	0	0	3	1.5	30	70	100
10	SC	20ASC0502	Server Side Scripting	1	0	2	2	100	0	100
Total credits							24.5	370	630	1000

Community service Project with credits

(To visit the selected community to conduct survey (Socio-economic & domain survey) and conduct sensitization/awareness program/activities at the end of IV- semester before commencement of V-semester and complete immersion programme also during V-Semester and submit report in V - semester. Assessment will be done at the end of V-Semester).

Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)

4	0	0	4	0	0	0
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Semester V (Third year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	PC	20APC0516	Computer Networks	3	0	0	3	30	70	100
2	PC	20APC0518	Formal Languages & Automata Theory	3	0	0	3	30	70	100
3	PC	20APC0519	Software Engineering	3	0	0	3	30	70	100
4	OE-1	20APE0417 20AOE0303 20AOE9925	Sensors and IoT Optimization Techniques Deterministic & Stochastic Statistical Methods	3	0	0	3	30	70	100
5	PE-1	20APE0501 20APE0502 20APE0503	Data Warehousing and Mining Design Patterns Computer Graphics	3	0	0	3	30	70	100
6	PC Lab	20APC0520	Software Engineering Lab	0	0	3	1.5	30	70	100
7	PC Lab	20APC0517	Computer Networks Simulation Lab	0	0	3	1.5	30	70	100
8	SC	20ASA0503	Mobile Application Development	1	0	2	2	100	0	100
9	MC	20AMC9901	Biology for Engineers	2	0	0	0	30	0	30
10	CSP	20CSP0501	Community service project	0	0	0	1.5	100	0	100
Total credits							21.5	440	490	930
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				4	0	0	4	0	0	0

Semester VI (Third year)

Sl. No.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	PC	20APC0521	Artificial Intelligence	3	1	0	3	30	70	100
2	PC	20APC0523	Compiler Design	3	0	0	3	30	70	100
3	PC	20APC0528	Cloud Computing	3	0	0	3	30	70	100
4	PE-2	20APE0504 20APE0505 20APE0506	Machine Learning Real Time Operating Systems Agile Methodologies	3	0	0	3	30	70	100
5	OE-2/ JOE (MOOCS-1)	20AJOE0501 20AJOE0501B 20AJOE0502 20AJOE0503 20AJOE0504 20AJOE0505 20AJOE0506	Job Oriented Elective (MOOCS) Blockchain and Its Applications Introduction to Cyber Security Model Checking System and usable security Introduction to soft computing Hardware security GPU Architectures and Programming	3	-	-	3	-	-	100
6	PC Lab	20APC0522	Artificial Intelligence Lab	0	0	3	1.5	30	70	100
7	PC Lab	20APC0524	Compiler Design Lab	0	0	3	1.5	30	70	100
8	PC Lab	20APC0529	Cloud Computing Lab	0	0	3	1.5	30	70	100
9	SC	20ASA0502	Soft Skills	1	0	2	2	100	0	100
10	MC	20AMC9904	Professional Ethics and Human Values	2	0	0	0	30	0	30
Total credits							21.5	340	490	930
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				4	0	0	4	0	0	0
Industry Internship (Mandatory) for 6-8 Weeks duration during summer vacation										


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Semester VII (Fourth year)

Sl. No.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	PE-3		Cyber Security Adhoc & Sensor Networks Soft Computing Distributed Systems	3	1	0	3	30	70	100
2	PE-4		Predictive Analytics Natural Language Processing Data Analytics Information Retrieval Techniques Human-Computer Interfaces	3	0	0	3	30	70	100
3	PE-5 (MOOCS-2)		Reinforcement Learning Introduction to Quantum Computing: Quantum Algorithms and Qiskit Advanced Distributed systems Parameterized Algorithms Spatial Informatics Demystifying Networking Design & Implementation of Computational Complexity	-	-	-	3	-	-	100
4	OE-3/JOE		Cryptography and Network Security Embedded Systems Fundamentals of Robotics	2	0	2	3	30	70	100
5	OE-4/JOE		Data Science Information Retrieval Systems Advanced Computer Networks	2	0	2	3	30	70	100
6	HE		Management Science Mathematical Modelling Simulation Entrepreneurship Development	3	0	0	3	30	70	100
7	SA	20ASA0504	Data Analysis using R	1	0	2	2	100	0	100
8	PR	20APR0501	Evaluation of Industry Internship(III-II Summer Internship)	0	0	0	3	100	0	100
Total credits							23	350	350	800
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				4	0	0	4	0	0	0

Semester VIII (Fourth year)

Sl. No.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	PR	20APR0502	Project Project work, seminar and internship in industry	0	0	0	12	60	140	200
Total credits							12	60	140	200


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HONOURS IN COMPUTER SCIENCE AND ENGINEERING

S.NO	SUB.CODE	COURSE NAME	CREDITS
1	20AHN0501	DESIGN AND IMPLEMENTATION OF HUMAN COMPUTER INTERFACES	3
2	20AHN0502	SOCIAL NETWORKS	3
3	20AHN0503	NO SQL DATABASES	3
4	20AHN0504	ADVANCED IOT APPLICATIONS	3
5	20AHN0505	INTRODUCTION TO INDUSTRY 4.0 AND INDUSTRIAL INTERNET OF THINGS	3
6	20AHN0506	COMPETITIVE PROGRAMMING-1/International Collegiate Programming Contest(ICPC) Laboratory-1	2.5
7	20AHN0507	COMPETITIVE PROGRAMMING-2/International Collegiate Programming Contest(ICPC) Laboratory-2	2.5
		TOTAL	20

MINOR DEGREE IN COMPUTER SCIENCE AND ENGINEERING FOR ECE, EEE, CE & ME

S.NO	SUB.CODE	COURSE NAME	L	T	P	CREDITS
1	20AMN0501	OPERATING SYSTEMS	2	1	0	3
2	20AMN0502	COMPUTER ORGANIZATION	2	1	0	3
3	20AMN0503	COMPUTER NETWORKS	2	1	0	3
4	20AMN0504	DESIGN AND ANALYSIS OF ALGORITHMS	3	0	0	3
5	20AMN0505	OBJECT ORIENTED PROGRAMMING THROUGH JAVA	2	1	0	3
6	20AMN0506	MINOR DISCIPLINE PROJECT	-	-	-	5
		TOTAL				20


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**ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, TIRUPATI
(AUTONOMOUS)**

**B. Tech - CSE (Artificial Intelligence & Machine Learning)
(Effective for the batches admitted from 2021-22)**

INDUCTION PROGRAM (3 weeks duration)	
❖	Physical activity
❖	Creative Arts
❖	Universal Human Values
❖	Literary
❖	Proficiency Modules
❖	Lectures by Eminent People
❖	Visits to local Areas
❖	Familiarization to Dept./Branch & Innovations

Semester I (First year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
							C			
1	BS	20ABS9901	Algebra & Calculus	3	0	0	3	30	70	100
2	BS	20ABS9902	Applied Physics	3	0	0	3	30	70	100
3	HS	20AHS9901	Communicative English	3	0	0	3	30	70	100
4	ES	20AES0301	Engineering Graphics	1	0	4	3	30	70	100
5	ES	20AES3301	Problem Solving and Programming	3	0	0	3	30	70	100
6	HS Lab	20AHS9902	Communicative English Lab	0	0	3	1.5	30	70	100
7	BS Lab	20ABS9907	Applied Physics Lab	0	0	3	1.5	30	70	100
8	ES Lab	20AES3302	Problem Solving and Programming Lab	0	0	3	1.5	30	70	100
			Total credits				19.5	240	560	800



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Semester II (First year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	BS	20ABS9911	Probability and Statistics	3	0	0	3	30	70	100
2	BS	20ABS9921	Numerical Methods	3	0	0	3	30	70	100
3	ES	20AES3303	Basics of Python Programming	3	0	0	3	30	70	100
4	ES	20AES3305	Data Structures	3	0	0	3	30	70	100
5	ES	20AES3307	Web Design	1	0	4	3	30	70	100
6	ES Lab	20AES3304	Basics Of Python Programming Lab	0	0	3	1.5	30	70	100
7	BS Lab	20ABS9918	Computational Lab	0	0	3	1.5	30	70	100
8	ES Lab	20AES3306	Data Structures Lab	0	0	3	1.5	30	70	100
9	MC	20AMC9903	Environmental Studies	2	0	0	0	30	0	30
			Total credits				19.5	270	560	830

Semester III (Second year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	BS	20ABS9914	Discrete Mathematical Structures	3	0	0	3	30	70	100
2	PC	20APC3301	Digital Electronics and Microprocessors	3	0	0	3	30	70	100
3	PC	20APC3302	Database Management Systems	3	0	0	3	30	70	100
4	PC	20APC3304	Object Oriented Programming through Java	3	0	0	3	30	70	100
5	PC	20APC3306	Computer Organization and Architecture	3	0	0	3	30	70	100
6	PC Lab	20APC3303	Database Management Systems Lab	0	0	3	1.5	30	70	100
7	PC Lab	20APC3305	Object Oriented Programming through Java Lab	0	0	3	1.5	30	70	100
8	PC Lab	20APC3307	Computer Organization and Microprocessor Lab	0	0	3	1.5	30	70	100
9	SOC	20ASC3301	Client Side Scripting	1	0	2	2	100	0	100
10	MC	20AMC9902	Constitution of India	2	0	0	0	30	0	30
			Total credits				21.5	370	560	930


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Semester IV (Second year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	PC	20APC3308	Software Engineering for AI	3	0	0	3	30	70	100
2	PC	20APC3309	Artificial Intelligence	3	0	0	3	30	70	100
3	PC	20APC3311	Data Mining and Data Warehousing	3	0	0	3	30	70	100
4	PC	20APC3313	Operating Systems	3	0	0	3	30	70	100
5	HS	20AHSMB01	Managerial Economics and Financial Analysis	3	0	0	3	30	70	100
6	HS	20AHS9905	Universal Human Values	3	1	0	3	30	70	100
7	PC Lab	20AES3310	Artificial Intelligence Lab	0	0	3	1.5	30	70	100
8	PC Lab	20APC3312	Data Mining and Data Warehousing Lab	0	0	3	1.5	30	70	100
9	PC Lab	20APC3314	Operating Systems Lab	0	0	3	1.5	30	70	100
10	SOC	20ASC3302	Server Side Scripting	1	0	2	2	100	0	100
Total credits							24.5	370	630	1000
<p align="center">Community Service Project (Mandatory) for 6 weeks duration during summer vacation. (To visit the selected community to conduct survey (Socio-economic & domain survey) and conduct sensitization/awareness program/activities at the end of IV- semester before commencement of V-semester and complete immersion programme also during V-Semester and submit report in V - semester. Assessment will be done at the end of V-Semester)</p>										
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				0	0	0	3	0	0	0


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Semester V (Third year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	PC	20APC3315	Big data Technologies	3	0	0	3	30	70	100
2	PC	20APC3316	Machine Learning	3	0	0	3	30	70	100
3	PC	20APC3318	Deep Learning	3	0	0	3	30	70	100
4	OE - 1	20AOE3301	Automata theory and compiler design	2	0	2	3	30	70	100
		20AOE3302	Information Retrieval	2	0	2				
		20AES3008	Deterministic and Stochastic Statistical Methods	2	0	2				
5	PE - 1	20APE3301	Computer Networks	3	0	0	3	30	70	100
		20APE3302	Cryptography and Network Security	3	0	0				
		20APE3303	Game Programming	3	0	0				
6	PC Lab	20APC3317	Machine Learning Lab	0	0	3	1.5	30	70	100
7	PC Lab	20APC3019	Deep Learning Lab	0	0	3	1.5	30	70	100
8	SOC	20ASC3303	Conversational AI	1	0	2	2	100	0	100
9	MC	20AMC9904	Professional Ethics and Human Values	2	0	0	0	30	0	30
10	CSP	20CSP3301	Evaluation of Community Service Project	0	0	0	1.5	100	0	100
Total credits							21.5	440	490	930
Honors/Minor courses (The hours distribution can be 3-0- 2 or 3-1-0 also)				4	0	0	4	0	0	0


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Semester VI (Third year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	PC	20APC3320	Natural Language Processing	3	1	0	3	30	70	100
2	PC	20APC3322	Advanced Machine Learning	3	0	0	3	30	70	100
3	PC	20APC3324	Cloud Computing	3	0	0	3	30	70	100
4	PE - 2	20APE3304	Computational Intelligence	3	0	0	3	30	70	100
		20APE3305	Industry 4.0	3	0	0				
		20APE3306	Advanced Databases	3	0	0				
5	OE - 2 (MOOCS-1) NPTEL*	20AOE3304	Robotic Sensors, Vision And Hardware Implementation	-	-	-	3	-	-	100
		20APE0416	Wireless Sensor Networks							
		20APC0323	Operation Research							
			Computer Graphics							
6	PC Lab	20APC3321	Natural Language Processing Lab	0	0	3	1.5	30	70	100
7	PC Lab	20APC3323	Advanced Machine Learning Lab	0	0	3	1.5	30	70	100
8	PC Lab	20APC3325	Cloud Computing Lab	0	0	3	1.5	30	70	100
9	SOC	20ASC3304	Soft Skills	1	0	2	2	100	0	100
10	MC	20AMC9901	Biology for Engineers	2	0	0	0	30	0	30
			Total credits				21.5	340	490	930
			Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)	0	0	0	3	0	0	0
Industrial/Research Internship (Mandatory) 2 Months during summer vacation										



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Semester VII (Fourth year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	PE - 3	20APE3307	Data Science	3	0	0	3	30	70	100
		20APE3308	Business Process Management	3	0	0				
		20APE3309	Health Care Analytics	3	0	0				
2	PE - 4	20APE3310	Block Chain	3	0	0	3	30	70	100
		20APE3311	Cloud Security and Privacy	3	0	0				
		20APE3312	Social Network Analysis	3	0	0				
3	PE - 5 (MOOCS-2) NPTEL*	20APE3313	Cyber Security	-	-	-	3	-	-	100
		20APE3314	Virtual Reality							
		20APE3315	Quantum Computing							
4	OE - 3	20APE0415	Speech Processing	2	0	2	3	30	70	100
		20AOE3004	Internet of Things	2	0	2				
		20AOEMB02	Knowledge Engineering	2	0	2				
5	OE - 4	20AOE3305	Introduction to Watson AI	2	0	2	3	30	70	100
		20AOE3306	Data Science Tools	2	0	2				
		20AOE3307	Automation Anywhere - RPA	2	0	2				
6	HSE	20A5270	Entrepreneurship and Incubation	3	0	0	3	30	70	100
			Management Science	3	0	0				
			Enterprise Resource Planning	3	0	0				
7	SOC	19MBA0105	Statistical Computing And Data Analysis Using R Programming	1	0	2	2	100	0	100
8	INTERNSHIP	20AIN3302	Internship	0	0	0	3	100	0	100
Total credits							23	350	350	800
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				0	0	0	4	0	0	4

Semester VIII (Fourth year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	MAJOR PROJECT	20APR3301	Project, Project work, seminar and internship in industry	0	0	0	12	60	140	200
Total credits							12	60	140	200


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ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, TIRUPATI
(AUTONOMOUS)

B.Tech

(COMPUTER SCIENCE AND ENGINEERING - INTERNET OF THINGS AND CYBER SECURITY
INCLUDING BLOCKCHAIN TECHNOLOGY)

(Effective for the batches admitted in 2020-2021)

INDUCTION PROGRAM (3 weeks duration)

- ❖ Physical activity
- ❖ Creative Arts
- ❖ Universal Human Values
- ❖ Literary
- ❖ Proficiency Modules
- ❖ Lectures by Eminent People
- ❖ Visits to local Areas
- ❖ Familiarization to Dept./Branch & Innovations

Semester I (First year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	BS	20ABS9901	Algebra & Calculus	3	0	0	3	30	70	100
2	BS	20ABS9904	Chemistry	3	0	0	3	30	70	100
3	ES	20AES0501	Problem Solving and Programming	3	0	0	3	30	70	100
4	ES	20AES0301	Engineering Graphics	1	0	4	3	30	70	100
5	ES	20AES0505	Information Technology and Numerical Methods	3	0	0	3	30	70	100
6	ES LAB	20AES0506	Computer Science and Engineering Workshop	0	0	3	1.5	30	70	100
7	BS LAB	20ABS9909	Chemistry Lab	0	0	3	1.5	30	70	100
8	ES LAB	20AES0503	Problem Solving and Programming Lab	0	0	3	1.5	30	70	100
Total credits							19.5	240	560	800



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Semester II (First year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
							C			
1	BS	20ABS9902	Applied Physics	3	0	0	3	30	70	100
2	BS	20ABS9911	Probability and Statistics	3	0	0	3	30	70	100
3	HS	20AHS9901	Communicative English	3	0	0	3	30	70	100
4	ES	20AES0502	Data Structures	3	0	0	3	30	70	100
5	ES	20AES0507	Web Design	1	0	4	3	30	70	100
6	HS LAB	20AHS9902	Communicative English Lab	0	0	3	1.5	30	70	100
7	BS LAB	20ABS9907	Applied Physics Lab	0	0	3	1.5	30	70	100
8	ES LAB	20AES0504	Data Structures Lab	0	0	3	1.5	30	70	100
9	MC	20AMC9903	Environmental Studies	2	0	0	0	30	0	30
Total credits							19.5	270	560	830



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Semester III (Second year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	BS	20ABS9914	Discrete Mathematical Structures	3	0	0	3	30	70	100
2	PC	20APC3601	Digital Electronics and Microprocessors	3	0	0	3	30	70	100
3	PC	20APC3602	Database Management Systems	3	0	0	3	30	70	100
4	PC	20APC3604	Basics of Python Programming	3	0	0	3	30	70	100
5	ES	20AES0205	Basics of Electrical and Electronics Engineering	3	0	0	3	30	70	100
6	PC Lab	20APC3603	Database Management Systems Laboratory	0	0	3	1.5	30	70	100
7	PC Lab	20APC3605	Basics of Python Programming Lab	0	0	3	1.5	30	70	100
8	ES Lab	20AES0206	Basics of Electrical and Electronics Engineering Lab	0	0	3	1.5	30	70	100
9	SC	20ASC3601	Client Side Scripting	1	0	2	2	100	0	100
10	MC	20AMC9902	Constitution of India	2	0	0	0	30	0	30
Total credits							21.5	370	560	930



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Semester IV (Second year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	PC	20APC3606	Computer Organization	3	0	0	3	30	70	100
2	PC	20APC3607	Computer Networks	3	0	0	3	30	70	100
3	PC	20APC3609	Object Oriented Programming through Java	3	0	0	3	30	70	100
4	PC	20APC3611	Operating Systems	3	0	0	3	30	70	100
5	HS	20AHSMB01	Managerial Economics and Financial Analysis	3	0	0	3	30	70	100
6	HS	20AHS9905	Universal Human Values	3	1	0	3	30	70	100
7	PC Lab	20APC3608	Computer Networks Lab	0	0	3	1.5	30	70	100
8	PC Lab	20APC3610	Object Oriented Programming through Java Lab	0	0	3	1.5	30	70	100
9	PC Lab	20APC3612	Operating Systems Lab	0	0	3	1.5	30	70	100
10	SC	20ASC3602	Server Side Scripting	1	0	2	2	100	0	100
Total credits							24.5	370	630	1000
<p>Community Service Project (Mandatory) for 6 weeks duration during summer vacation. (To visit the selected community to conduct survey (Socio-economic & domain survey) and conduct sensitization/awareness program/activities at the end of IV- semester before commencement of V-semester and complete immersion programme also during V-Semester and submit report in V - semester. Assessment will be done at the end of V-Semester)</p>										
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				0	0	0	3	0	0	0


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Semester V (Third year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	PC	20APC3613	Cryptography and Network Security	3	0	0	3	30	70	100
2	PC	20APC3615	Embedded Systems and Internet of Things	3	0	0	3	30	70	100
3	PC	20APC3617	Fundamentals of Blockchain Technology	3	0	0	3	30	70	100
4	OE1	20AOE9926 20AOE0303 20APC0213	Mathematical Modeling and Simulation Optimization Techniques Control Systems	3	0	0	3	30	70	100
5	PE1	20APE3601 20APE3602 20APE3603	Software Engineering Distributed Database Automata Theory and Compiler Design	3	0	0	3	30	70	100
6	PC Lab	20APC3614	Cryptography and Network Security Lab	0	0	3	1.5	30	70	100
7	PC Lab	20APC3616	Embedded Systems and Internet of Things Lab	0	0	3	1.5	30	70	100
8	SC	20ASA0502	Soft Skills	1	0	2	2	100	0	100
9	MC	20AMC9901	Biology for Engineers	2	0	0	0	30	0	30
10	CSP	20CSP3601	Evaluation of Community Service Project	0	0	0	1.5	100	0	100
Total credits							21.5	440	490	930
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				4	0	0	4	0	0	0


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Semester VI (Third year)

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	PC	20APC3618	Cyber Security	3	1	0	3	30	70	100
2	PC	20APC3620	Advanced IoT Programming	3	0	0	3	30	70	100
3	PC	20APC3622	Building Private Block chain	3	0	0	3	30	70	100
4	PE2	20APE3604 20APE3605 20APE3606	Mobile Application Development Real time Operating System Design and Analysis of Algorithms	3	0	0	3	30	70	100
5	OE-2/ JOE (MOOCs-1)	20AJOE3601 20AJOE3601B 20AJOE3602 20AJOE3603 20AJOE3604 20AJOE3605 20AJOE3606	Job Oriented Elective I (MOOCs) Introduction to Machine Learning Introduction to Cyber Security Model Checking System and usable security Introduction to soft computing Hardware security GPU Architectures and Programming	3	-	-	3	-	-	100
6	PC Lab	20APC3619	Cyber Security Lab	0	0	3	1.5	30	70	100
7	PC Lab	20APC3621	Advanced IoT Programming Lab	0	0	3	1.5	30	70	100
8	PC Lab	20APC3623	Building Private Block chain Lab	0	0	3	1.5	30	70	100
9	SC	20ASA0501	Basics of Cloud Computing	1	0	2	2	100	0	100
10	MC	20AMC9904	Professional Ethics and Human Values	2	0	0	0	30	0	30
Total credits							21.5	370	560	930
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				4	0	0	4	0	0	0
Industrial/Research Internship (Mandatory) 2 Months during summer vacation										


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**Semester VII
(Fourth year)**

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL	
				L	T	P					
1	PE-3	20APE3607	Smart Sensor Technology for IoT								
		20APE3608	Cognitive IoT	3	0	0	3	30	70	100	
		20APE3609	Big Data Analytics for IoT								
2	PE-4	20APE3610	Cyber Security Risk Management and Mitigation	3	0	0	3	30	70	100	
		20APE3611	Cloud Security								
		20APE3612	Offensive, Defensive Cyber Security Techniques								
3	PE-5 (MOOCS 2)	20APE3613 20APE3614 20APE3615	Artificial Intelligence Machine Learning Deep Learning	-	-	-	3	-	-	100	
4	OE-3 - JOE	20AOE3604	Blockchain Technologies and Use Cases								
		20AOE3605	Cryptocurrencies	2	0	2	3	30	70	100	
		20AOE3606	Fundamentals Bit Coin Technology								
5	OE-4 JOE	20AOE3607	Programming for the Internet of Things Project								
		20AOE3608	Cyber security and its 10 domains	2	0	2	3	30	70	100	
		20AOE3609	Blockchain Applications and Limitation								
6	HE		Management Science Deterministic Stochastic and statistical Method Entrepreneurship Development	3	0	0	3	30	70	100	
7	SC	20ASC3601	Industrial and Medical IOT	1	0	2	2	100	0	100	
8	PR	20APR3602	Evaluation of Industry Internship(III-II Summer Internship)	0	0	0	3	100	0	100	
Total credits							23	350	350	800	
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				4	0	0	4	0	0	0	



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**Semester VIII
(Fourth year)**

Sl.	Category	Course Code	Course Title	Hours per week			Credits	CIE	SEE	TOTAL
				L	T	P				
1	PR	20APR3603	Project Project work, seminar and internship in industry	0	0	0	12	60	140	200
Total credits							12	60	140	200

HONOURS IN COMPUTER SCIENCE AND ENGINEERING - CIC

S.NO	SUB.CODE	COURSE NAME	CREDITS
1	20AHN3601	DESIGN AND IMPLEMENTATION OF HUMAN COMPUTER INTERFACES	3
2	20AHN3602	SOCIAL NETWORKS	3
3	20AHN3603	NO SQL DATABASES	3
4	20AHN3604	ADVANCED IOT APPLICATIONS	3
5	20AHN3605	INTRODUCTION TO INDUSTRY 4.0 AND INDUSTRIAL INTERNET OF THINGS	3
6	20AHN3606	COMPETITIVE PROGRAMMING-1/International Collegiate Programming Contest(ICPC) Laboratory-1	2.5
7	20AHN3607	COMPETITIVE PROGRAMMING-2/International Collegiate Programming Contest(ICPC) Laboratory-2	2.5
TOTAL			20

MINOR DEGREE IN CIC FOR ECE, EEE, CE & ME

S.NO	SUB.CODE	COURSE NAME	CREDITS
1	20AMN3601	OPERATING SYSTEMS	3
2	20AMN3602	COMPUTER ORGANIZATION	3
3	20AMN3603	COMPUTER NETWORKS	3
4	20AMN3604	CYBER SECURITY	3
5	20AMN3605	INTERNET OF THINGS	3
6	20AMN3606	MINOR DISCIPLINE PROJECT	5
TOTAL			20


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