

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

COMPUTER SCIENCE AND ENGINEERING
(Effective for the batches admitted in 2020 - 21)

Vision

To achieve excellence in the field of Computer Science and Engineering with professional competency.

Mission

- Provide quality education to achieve excellence.
- Upgrade infrastructure and technologies to meet the learner's needs.
- Establish linkages with Government and Industry to enhance technical skills, entrepreneurship and innovations.
- Support research to serve the needs of the society.

Institutional Objectives

- To create a conducive and competitive environment for students through curricular and extra-curricular activities.
- Promote the culture of research among the faculty.
- To promote synergetic alliances with premier Institutions, Industry, CSIR laboratories and various Government organizations for Collaborative Research Projects.
- To promote economic and social enrichment of the society through Skill Development Programmes, Entrepreneurship and extension activities.
- To introduce demand driven new UG & PG academic programmes.
- To ensure a high degree of quality in terms of providing infrastructure, research ambience, faculty and staff development.

Core Values

- **Thirst for Quality Education:** The stake holders of the institute particularly management, employees and students of the institution have a consistent thirst for quality improvement of the processes and services in the institution.
- **Life Long Learning:** In the fast changing technological world, acquiring a special skill at one point of time will not be enough for ever long survival. Hence to flourish in the work place and to bring in innovations in the ways of doing, employee, student as well as alumni must be continuous learners and tech savvy.
- **Diversity and Participation:** AITS promotes the involvement of faculty, staff, and students from all social, economic, ethnic, cultural and religious backgrounds to get the synergy of combining the diversified agents. The focus is on involving students to exhibit their talent in various curricular and co-curricular activities and strengthening alumni link to share their experiences to the students.
- **Academic Integrity and Accountability:** Management induces accountability in the employees for the career of the students and the academic leadership establishes a mentoring mechanism for realization of responsibilities of students towards their parents and in turn to the society

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

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 Blockchain Technology	3	0	0	3	30	70	100
5	OE-2/ JOE (MOOCS-1)		Introduction to robotics Design, Technology and Innovation Introduction to Smart Grid Introduction to Wireless and Cellular Communications Stochastic control and communication Real-Time Digital Signal Processing VLSI Interconnects Developing Soft Skills and Personality Body language: Key to professional Success Psychology of Everyday Educational Leadership Entrepreneurship And IP Strategy Globalization And Culture Consumer Psychology Public Speaking Project Management Training Of Trainers Decision-Making Under	-	-	-	3	-	-	100

			Uncertainty Game Theory Organizational Behavior Customer Relationship Management Decision Support System For Managers Stress Management							
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	20AHS9902	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										

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 Agile Methodologies 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

HONOURS IN COMPUTER SCIENCE AND ENGINEERING

S.NO	SUB.CODE	COURSE NAME	CREDITS
1	20AHN0501	HUMAN COMPUTERS INTERACTION	3
2	20AHN0502	SOCIAL NETWORKS	3
3	20AHN0503	NO SQL DATABASES	3
4	20AHN0504	COMPUTER VISION	3
5	20AHN0505	INDUSTRY 4.0 AND INDUSTRIALIZATION	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