

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, TIRUPATI (AUTONOMOUS)

(COMPUTER SCIENCE AND ENGINEERING-ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)
(Effective for the batches admitted in 2021-22)

Vision

“To achieve excellence in the field of Artificial Intelligence and Machine Learning with professional competency”.

Mission

- To educate, train and develop highly qualified engineers capable of meeting the challenges of a rapidly growing artificial intelligence system and capable of handling other diverse issues in data science engineering.
- To educate students towards the design and development of intelligent products and services meeting global demands and standards
- Best utilize Industry Institute linkages to acquire professional competency.
- Create facilities of training and research in new thrust areas of computing thus promoting continuing education facilities.
- To enable the graduates to adapt to the rapidly changing technology with strong fundamentals

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)**

**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				
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

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

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

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

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										

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

Guidelines for MOOC Courses @ AITS::Tirupati

1. Two MOOC courses are introduced in AK20 curriculum in III B.Tech II and IV B.Tech I Semester (6th and 7th Semester) Students should compulsorily submit the pass certificate generated by NPTEL for verification and for consideration of credits. As understood, Certificate by NPTEL will be issued only when a registered students submit assignments regularly as per schedule given and get a minimum of 10 out of 25 marks; and obtain a minimum of 30 marks out of 75 marks in the end examination. (Both criteria should be met to declare pass by NPTEL).
2. Out of two MOOC courses introduced, one MOOC shall be with 'Professional Elective Nature and another with 'open Elective' nature: Head of the department will announce options available on the NPTEL platform, and the students have to select 3 credited courses only to fit into the existing credit scheme.
3. Courses with minimum 8 weeks learning duration only shall be chosen for MOOC courses.
4. Marks or percentage obtained will be converted to grade points and reflects on the grade sheet.
5. Swayam NPTEL Courses will be notified on this platform before 1st November for January semester; and will be notified before 1st June for July semester. Accordingly HOD shall issue notification/circular to the teachers connected and to the concerned student groups.
6. In case the student fails/ absent in the MOOC courses in the regular examination he/she will be all owed to register for next supply examination in manual mode as he can't avail MOOC platform to clear the pending course during the next season. The pattern of examination for manual mode in supplementary will be same as that of NPTEL question paper.
7. Examination fee paid for the 8th semester to the exam branch of the college is only for project work, internships and seminars. The exam fee payable for taking NPTEL online courses shall be borne by the students only
8. Teachers connected to the student group for guidance of MOOC courses shall also register for the course, go through the e-content in it to provide proper guidance to the students and also to get his 'mentor certificate'.
9. Registration facility – extension of dates if any shall be continuously monitored by the HOD & students.

HONOURS IN ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

S.NO	SUB.CODE	COURSE NAME	CREDITS
1	20AHN0501	HUMAN COMPUTER INTERACTION	3
2	20AHN0502	SOCIAL NETWORKS	3
3	20AHN0503	NOSQL 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 ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING FOR ECE, EEE, CE & ME

S.NO	SUB.CODE	COURSE NAME	CREDITS
1	20AMN0501	OPERATING SYSTEMS	3
2	20AMN0502	COMPUTER ORGANIZATION	3
3	20AMN0503	COMPUTER NETWORKS	3
4	20AMN0504	ARTIFICIAL INTELLIGENCE	3
5	20AMN0505	MACHINE LEARNING	3
6	20AMN0506	MINOR DISCIPLINE PROJECT	5
		TOTAL	20