VIT Vidyalankar Institute of Technology
Accredited A+ by NAAC

Vidyalankar Institute of Technology

An Autonomous Institute affiliated to University of Mumbai

Master of Technology

in

Computer Engineering

Programme Structure

(With effect from the Academic Year 2022-23)

Preamble

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated, and taken forward in a systematic manner. Therefore, autonomy for Vidyalankar Institute of Technology is not merely a transition from pre-cooked syllabi to self-designed curriculum. Autonomy curriculum of the Institute offers required academic flexibility with emphasis on industry requirements and market trends, employability, problem-solving approach and research ability which leads to improving competency level of learners with diverse strengths. In line with this, the curriculum framework designed is **Choice-Based Credit and Grading System (CBCGS)**. Number of credits for courses learnt by learners, internships and dissertation is finalized considering the scope of study and the ability that a learner should gain through the programme.

The curriculum has core courses of engineering, specific to the branch. These courses are completed in first year of the engineering programme that enables learners to work on their chosen dissertation topic during their final year. The curriculum planned by the Institute offer flexibility and diversity to learners to choose any set of courses from a basket of professional electives. Learner can also choose to specialize in a domain as per their field of interest. The selection of unique specialization tracks based on recent developments and industrial requirements is a salient feature of this curricula ensuring employability. Each specialization track has mandatory courses positioned and sequenced to achieve sequential and integral learning for the required depth of the specific domain. Learner can choose to complete these courses in first year of the engineering program that enables him/her to prepare for research during their final year. Credits additional to core and professional elective courses, include dissertation, internships, advanced courses in the field of computer engineering, multi-disciplinary courses, special skill development courses and similar knowledge that make learner capable to do further research or work in industrial environment.

Thus, the academic plan of VIT envisages a shift from summative to formative and competency-based learning system which will enhance learner's ability towards higher education, employability and entrepreneurship.

Chairman, Board of Studies
Department of Computer Engineering
Vidyalankar Institute of Technology

Chairman, Academic Council
Vidyalankar Institute of Technology

CREDIT STRUCTURE

Learner is expected to complete requirement of 70 credits (with minimum credits under each category as mentioned below) for M.Tech. degree in Computer Engineering.

Sr. No.	Course Category	Credits / Audit
I	Core	16
II	Professional Elective	16
III	Open Elective	08
IV	Internship	04
V	Dissertation	26
Total		**70**

Definition of Credit

Duration	Credit
1 Hr. Lecture (L) per week	1
1 Hr. Tutorial (T) per week	1
1 Hr. Practical (P) per week	0.5

COURSES UNDER VARIOUS CATEGORIES

I. Core Courses

Sr. No.	Course Code	Course Name	Hours Per Week			Credits	Preferred Semester
			Theory	Practical	Tutorial		
1	CE63	Advanced Data Structure and Algorithms	3	2	-	4	1
2	CE64	HPC, Cluster and Grid Computing	3	2	-	4	1
3	CE65	Parallel Algorithms and Programming	3	2	-	4	2
4	CE66	Computational Intelligence	3	2	-	4	2

II. Professional Elective Courses

Sr. No.	Course Code	Course Name	Hours Per Week			Credits	Preferred Semester
			Theory	Practical	Tutorial		
1	CE67	Building Blocks of Artificial Intelligence	3	2	-	4	1
2	CE68	Machine Learning and Pattern Recognition	3	2	-	4	1
3	CE69	Deep and Reinforcement	3	2	-	4	2

		Learning					
4	CE70	Bio-inspired Artificial Intelligence	3	2	-	4	2
5	CE71	Probability and Statistics for Data Science	3	2	-	4	1
6	CE72	Data Preparation and Exploration	3	2	-	4	1
7	CE73	Big Data	3	2	-	4	2
8	CE74	Natural Language Processing	3	2	-	4	2
9	CE75	Smart Sensors and Internet of Things	3	2	-	4	1
10	CE76	IoT - Application and Communication Protocol	3	2	-	4	1
11	CE77	Wireless Access Technologies	3	2	-	4	2
12	CE78	IOT and Smart Cities	3	2	-	4	2
13	CE79	Data Encryption and Compression	3	2	-	4	1
14	CE80	Ethical Hacking and Digital Forensics	3	2	-	4	1
15	CE81	Database Security and Access control	3	2	-	4	2
16	CE82	Intrusion Detection and Prevention	3	2	-	4	2
17	ET72	Wireless Adhoc and Sensor Networks	3	2	-	4	1
18	ET74	Advanced Digital Signal Processing	3	2	-	4	1
19	ET77	Embedded Communication Systems Design	3	2	-	4	2
20	ET86	Reconfigurable Computing and FPGAs	3	2	-	4	2

III. Open Elective Courses

Sr. No.	Course Code	Course Name	Hours Per Week			Credits	Preferred Semester
			Theory	Practical	Tutorial		
1	OE04	Sustainability Management	4	-	-	4	-
2	OE05	Operation Research	4	-	-	4	-
3	OE06	IPR and Patenting	4	-	-	4	-
4	OE07	Research Methodology	4	-	-	4	-
5	OE15	Teaching Pedagogy & Educational	4	-	-	4	1

Sr. No.	Course Code	Course Name	Hours Per Week			Credits	Preferred Semester
			Theory	Practical	Tutorial		
		Technology					
6	OE13*	Online Course 1 (MOOC)	As per course			2	-
7	OE14*	Online Course 2 (MOOC)	As per course			2	-

*Online Courses (MOOC) of 2 credits is equivalent to 30 hours course.

IV. Internship

Sr. No.	Course Code	Course Name	Hours Per Week			Credits	Preferred Semester
			Theory	Practical	Tutorial		
1	CE83	Internship	-	8$	-	4	3
2	CE84	Skill Based Course 1	-	4#	-	2	3
3	CE85	Skill Based Course 1	-	4#	-	2	3

$: Internship of 4 credits is equivalent to 120 hours of contact.

#: Skill based Course of 2 credits is equivalent to 60 hours course.

V. Dissertation

Sr. No.	Course Code	Course Name	Hours Per Week			Credits	Preferred Semester
			Theory	Practical	Tutorial		
1	CE86	Dissertation-I	-	20	-	10	3
2	CE87	Dissertation-II	-	32	-	16	4

Guidelines for Specialization Certificate

Learner can avail a Specialization Certificate from the Institute stating "Successful completion of Masters of Technology in Computer Engineering with Specialization in <Track Name> "

Mandatory Courses to be completed to avail Specialization Certificate are as stated below:

Courses for Specialization Certificate in various Tracks			
Artificial Intelligence	**Data Science**	**Internet of Things**	**Computer Security**
CE67	CE71	CE75	CE79
CE68	CE72	CE76	CE80
CE69	CE73	CE77	CE81
CE70	CE74	CE78	CE82

- Learner shall select courses from the ones offered by the department for that semester.
- Opting for track is not mandatory.