



**B.E. COMPUTER SCIENCE AND ENGINEERING
(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)**

CURRICULUM FOR SEMESTER I TO VIII

(2023 - 2027 BATCH)

REGULATIONS 2023

RAJALAKSHMI INSTITUTE OF TECHNOLOGY
(An Autonomous Institution, Affiliated to Anna University, Chennai)
Kuthambakkam, Chennai 600124

RAJALAKSHMI INSTITUTE OF TECHNOLOGY, CHENNAI
An Autonomous Institution, Affiliated to Anna University, Chennai

REGULATIONS 2023
CHOICE BASED CREDIT SYSTEM

B.E. COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

I VISION OF THE DEPARTMENT

- ❖ To encourage more employability, innovative research, and entrepreneurial thinking by developing emerging technology solutions for the benefit of industry and society through effective teaching and learning processes.

II MISSION OF THE DEPARTMENT

- ❖ Providing high-quality, value-added technical education and producing technology professionals who can think creatively and inspire others.
- ❖ Applying rational thought to design and create cutting-edge products in collaboration with industry stakeholders in order to meet global standards and demands.
- ❖ Improving essential skills in Artificial Intelligence and Machine Learning.

III PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

- ❖ To excel in society, students will significantly advance their knowledge of the principles of engineering, science, and technology.
- ❖ To pursue higher education in an AI environment to address issues in the real world.
- ❖ To receive training in creating, developing, and quality assurance knowledge of AI and ML technologies in order to produce solutions to challenges encountered in the real world.
- ❖ To provide students with the knowledge and skills necessary to use computational tools and AI and ML effectively.
- ❖ To encourage graduates with advancing the knowledge of AI and ML approaches among entrepreneurs and researchers.

IV PROGRAM OUTCOMES (POs)

1. **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
5. **Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

V PROGRAM SPECIFIC OUTCOMES (PSOs)

The Students will be able to

1. Create and implement optimized solutions for computationally demanding applications.
2. Use Artificial Intelligence and Machine Learning Tools and Techniques to solve multidisciplinary problems
3. Create AI and Machine Learning models on data to facilitate better decision-making in societal issues.

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CURRICULUM FOR SEMESTERS I TO VIII
(2023-2027)
SEMESTER I

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
	IP23111	Induction Programme		-	-	-	-	0
THEORY COURSES								
1	HS23111	Communicative English	HSMC	3	0	0	3	3
2	CY23111	Engineering Chemistry	BSC	3	0	0	3	3
3	MA23111	Matrices and Calculus	BSC	3	1	0	4	4
4	GE23111	Problem Solving and C Programming	ESC	3	0	0	3	3
5	PH23111	Physics for Information Science	BSC	3	0	0	3	3
6	GE23112	தமிழர் மரபு /Heritage of Tamils	HSMC	1	0	0	1	0
LABORATORY COURSES								
7	CY23121	Chemistry Laboratory	BSC	0	0	2	2	1
8	PH23121	Physics Laboratory	BSC	0	0	2	2	1
9	GE23121	Problem Solving and C Programming Laboratory	ESC	0	0	2	2	1
10	GE23122	Engineering Practices Laboratory	ESC	0	0	2	2	1
TOTAL								20

SEMESTER II

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSES								
1	HS23211	Professional English	HSMC	2	0	0	2	2
2	MA23211	Statistics and Numerical Methods	BSC	3	1	0	4	4
3	GE23211	Basic Electrical and Electronics Engineering	ESC	3	0	0	3	3
4	AD23211	Python for Data Science	ESC	3	0	0	3	3
5	AD23212	Data Structures Design	PCC	3	0	0	3	3
6	GE23213	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	HSMC	1	0	0	1	0
LABORATORY ORIENTED THEORY COURSE								
7	GE23231	Engineering Graphics	ESC	2	0	4	6	4

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
LABORATORY COURSES								
8	AD23221	Python for Data Science Laboratory	ESC	0	0	2	2	1
9	AD23222	Data Structures Design Laboratory	PCC	0	0	2	2	1
10	GE23221	Communication Laboratory / Foreign Language	EEC	0	0	2	2	1
NCC/Service Club Credit Course Level 1#				2	0	0	2	2#
TOTAL								22

NCC Credit Course Level 1 is offered for NCC students only. The grades earned by the students will be recorded in the Mark Sheet, however the same shall not be considered for the computation of CGPA.

SEMESTER III

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSES								
1	MA23311	Discrete Mathematics	BSC	3	1	0	4	4
2	AL23311	Artificial Intelligence	PCC	3	0	0	3	3
3	CS23312	Object Oriented Programming	PCC	3	0	0	3	3
4	CS23411	Database Management Systems	PCC	3	0	0	3	3
LAB ORIENTED THEORY COURSE								
5	EC23331	Digital Principles and Computer Organization	ESC	3	0	2	5	4
LABORATORY COURSES								
6	AL23321	Artificial Intelligence Laboratory	PCC	0	0	2	2	1
7	CS23421	Database Management Systems Laboratory	PCC	0	0	2	2	1
8	CS23322	Object Oriented Programming Laboratory	PCC	0	0	2	2	1
INDUSTRY ORIENTED COURSE								
9	AD23IC1	Data Wrangling	EEC	1	-	-	1	1
TOTAL								21

SEMESTER IV

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSES								
1	GE23411	Environmental Sciences and Sustainability	BSC	2	0	0	2	2
2	AD23412	Formal Language and Automata Theory	PCC	3	1	0	4	4
3	AD23411	Data Analytics	PCC	3	0	0	3	3
4	AL23411	Machine Learning	PCC	3	0	0	3	3
5	CS23412	Operating Systems	PCC	3	0	0	3	3
LAB ORIENTED THEORY COURSE								
6	CS23431	Design and Analysis of Algorithms	PCC	3	0	2	5	4
LABORATORY COURSES								
7	AD23421	Data Analytics Laboratory	PCC	0	0	2	2	1
8	AL23421	Machine Learning Laboratory	PCC	0	0	2	2	1
9	CS23422	Operating Systems Laboratory	PCC	0	0	2	2	1
INDUSTRY ORIENTED COURSE								
10	AD23IC2	Introduction to AZURE Machine Learning	EEC	1	-	-	1	1
NCC / Service Club Credit Cours Level 2 [#]				3	0	0	3	3 [#]
TOTAL								23

[#] NCC Credit Course Level 2 is offered for NCC students only. The grades earned by the students will be recorded in the Mark Sheet, however the same shall not be considered for the computation of CGPA.

SEMESTER V

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSES								
1	AD23511	Deep Learning	PCC	3	0	0	3	3
2	CS23511	Computer Networks	PCC	3	0	0	3	3
3		Professional Elective I	PEC	-	-	-	-	3
4		Professional Elective II	PEC	-	-	-	-	3
5		Mandatory Course - I ^{&}	MC	3	0	0	3	0
LAB ORIENTED THEORY COURSE								
6	AL23531	Natural Language Processing	PCC	3	0	2	5	4
7	CB23531	Business Analytics	PCC	3	0	2	5	4
LABORATORY COURSES								
8	AD23521	Deep Learning Laboratory	PCC	0	0	2	2	1
9	CS23521	Computer Networks Laboratory	PCC	0	0	2	2	1
INDUSTRY ORIENTED COURSE								
10	AD23IC3	Tableau - Data Visualization	EEC	1	-	-	-	1
TOTAL								23

[&]Mandatory Course-I is a Non-credit Course (Student shall select one course from the list given under Mandatory Course-I)

SEMESTER VI

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSES								
1		Professional Elective III	PEC	-	-	-	-	3
2		Professional Elective IV	PEC	-	-	-	-	3
3		Open Elective-I*	OEC	3	0	0	3	3
4		Open Elective-II*	OEC	3	0	0	3	3
5		Mandatory Course-II ^{&}	MC	3	0	0	3	0
LAB ORIENTED THEORY COURSE								
6	EC23631	Embedded Systems and IoT	ESC	3	0	2	5	4
7	CS23631	Object Oriented Software Engineering	PCC	3	0	2	5	4
LABORATORY COURSES								
8	AL23621	Mini Project	EEC	0	0	4	4	2
NCC/Service Club Credit Course Level 3 [#]				3	0	0	3	3 [#]
TOTAL								22

*Open Elective - I and II Shall be chosen from the list of Open Electives offered by other Programmes.

[&]Mandatory Course-II is a Non-credit Course (Student shall select one course from the list given under Mandatory Course-II)

[#]NCC Credit Course Level 3 is offered for NCC students only. The grades earned by the students will be recorded in the Mark Sheet, however the same shall not be considered for the computation of CGPA

SEMESTER VII

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSES								
1	GE23711	Human Values and Ethics	HSMC	2	0	0	2	2
2		Elective - Management ^{\$}	HSMC	3	0	0	3	3
3	CS23513	Cryptography and Cyber Security	PCC	3	0	0	3	3
4		Professional Elective V	PEC	-	-	-	-	3
5		Professional Elective VI	PEC	-	-	-	-	3
LABORATORY COURSES								
7	AL23721	Internship/Certification Course	EEC	-	-	-	-	2
TOTAL								16

^{\$} Elective - Management shall be chosen from the list of Elective Management Courses.

SEMESTER VIII

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSES								
1		Open Elective - III *	OEC	3	0	0	3	3
LAB COURSE								
3	AL23821	Project Work	EEC	0	0	20	20	10
TOTAL								13

** Open Elective III (Shall be chosen from the list of open electives offered by other Programmes).

TOTAL CREDITS : 160

ELECTIVE – MANAGEMENT COURSES

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	GE23712	Engineering Economics and Financial Accounting	HSMC	3	0	0	3	3
2	GE23713	Human Resource Management	HSMC	3	0	0	3	3
3	GE23714	Knowledge Management	HSMC	3	0	0	3	3
4	GE23715	Principles of Management	HSMC	3	0	0	3	3
5	GE23716	Software Project Management	HSMC	3	0	0	3	3
6	GE23717	Total Quality Management	HSMC	3	0	0	3	3
7	GE23718	Management Information Systems	HSMC	3	0	0	3	3

MANDATORY COURSES I

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	MX23511	Disaster Risk Reduction and Management	MC	3	0	0	3	0
2	MX23512	Elements of Literature	MC	3	0	0	3	0
3	MX23513	Film Appreciation	MC	3	0	0	3	0
4	MX23514	Introduction to Women and Gender Studies	MC	3	0	0	3	0

MANDATORY COURSES II

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	MX23611	History of Science and Technology in India	MC	3	0	0	3	0
2	MX23612	Industrial Safety	MC	3	0	0	3	0
3	MX23613	State, Nation Building and Politics in India	MC	3	0	0	3	0
4	MX23614	Well Being with Traditional Practices - Yoga, Ayurveda and Siddha	MC	3	0	0	3	0

PROFESSIONAL ELECTIVE COURSES: VERTICALS

Sl. No.	Vertical 1	Vertical 2	Vertical 3	Vertical 4	Vertical 5	Vertical 6	Vertical 7
	DATA ANALYTICS	EMERGING AI	EMERGING TECHNOLOGIES	ARTIFICIAL INTELLIGENCE	FULL STACK DEVELOPMENT	SUPPLY CHAIN MANAGEMENT FOR INDUSTRIES	CYBER SECURITY AND DATA PRIVACY
1	AD23V11 Agriculture Data Analytics	AD23V21 AI in IoT	CS23V31 Cryptocurrency and Blockchain Technologies	AD23V41 Cognitive Science	CS23V25 Cloud Services Management	ME23V61 Industry 5.0	CS23V31 Cryptocurrency and Blockchain Technologies
2	AD23V12 Big data Analytics	AD23V22 Applied Machine Learning	CS23V32 Augmented Reality/ Virtual Reality	AD23V42 Generative AI	CS23V51 Agile and DevOps	ME23V62 Planning in Logistics	CS23V71 Digital and Mobile Forensics
3	AL23V11 Exploratory Data Analysis	AL23V21 Intelligent Bioinformatics	CS23V33 Autonomous Mobility Systems	AD23V43 Pattern Recognition	CS23V52 Mobile App Development	ME23V63 Supply Chain Analytics	CS23V72 Engineering Secure Software Systems
4	AD23V13 Data Warehousing and Data Mining	AD23V23 Cognitive Computing	CS23V34 Metaverse	AD23V24 Computer Vision	CS23V53 MLOps	ME23V64 Supply Chain Information System	CS23V73 Ethical Hacking
5	AD23V14 Health Care Analytics	AD23V26 Game Theory	CS23V21 Cloud Solution Architecture	AD23V44 Recommender Systems	CS23V54 Software Testing and Automation	ME23V65 Supply Chain Management	CS23V74 Modern Cryptography
6	AD23V16 Web and Social Media Analytics	AL23V22 Knowledge Engineering	CS23V35 Large Language Models	AD23V45 Reinforcement Learning	CS23V55 UI and UX Design	ME23V66 Supply Chain for Manufacturing	CS23V75 Network Security
7	AD23V17 Predictive Analytics	AL23V23 AI Optimization Techniques	CS23V36 Game Development	AD23V46 Text and Speech Analysis	CS23V56 Web Application Security	ME23V67 Sustainable Inventory Management	CS23V26 Security and Privacy in Cloud
8	AD23V18 Sentiment Analysis	AD23V28 Responsive AI	CS23V37 Intelligence Process Automation	AD23V28 Responsive AI	CS23V57 Web Technologies	ME23V68 Warehouse Automation	CS23V76 Social Network Security

Registration of Professional Elective Courses from Verticals:

A student can choose all the Professional Elective Courses either from one of the verticals or a combination of courses from all verticals in a semester. However, students irrespective of enrolling for additional courses for B.E. / B. Tech. (Hons.) are not permitted to choose more than one course from a row. Students are permitted to enroll more than one elective course from the same vertical in a semester. In the subsequent semesters students are permitted to enroll one more course in a row, provided if he/she has cleared the earlier course of the same row.

PROFESSIONAL ELECTIVE COURSES: VERTICALS

VERTICAL 1: DATA ANALYTICS

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	AD23V11	Agriculture Data Analytics	PEC	3	0	0	3	3
2	AD23V12	Big Data Analytics	PEC	3	0	0	3	3
3	ALV2311	Exploratory Data Analysis	PEC	3	0	0	3	3
4	AD23V13	Data warehousing and Data Mining	PEC	3	0	0	3	3
5	AD23V14	Health Care Analytics	PEC	3	0	0	3	3
6	AD23V16	Web and Social Media Analytics	PEC	3	0	0	3	3
7	AD23V17	Predictive Analytics	PEC	3	0	0	3	3
8	AD23V18	Sentiment Analysis	PEC	3	0	0	3	3

VERTICAL 2: EMERGING AI

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	AD23V21	AI in IoT	PEC	3	0	0	3	3
2	AD23V22	Applied Machine Learning	PEC	3	0	0	3	3
3	AL23V21	Intelligent Bioinformatics	PEC	3	0	0	3	3
4	AD23V23	Cognitive Computing	PEC	3	0	0	3	3
5	AD23V26	Game Theory	PEC	3	0	0	3	3
6	AL23V22	Knowledge Engineering	PEC	3	0	0	3	3
7	AL23V23	AI Optimization Techniques	PEC	3	0	0	3	3
8	AD23V28	Responsive AI	PEC	3	0	0	3	3

VERTICAL 3: EMERGING TECHNOLOGIES

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	CS23V31	Cryptocurrency and Blockchain Technologies	PEC	3	0	0	3	3
2	CS23V32	Augmented Reality/Virtual Reality	PEC	3	0	0	3	3
3	CS23V33	Autonomous Mobility Systems	PEC	3	0	0	3	3
4	CS23V34	Metaverse	PEC	3	0	0	3	3
5	CS23V21	Cloud Solution Architecture	PEC	3	0	0	3	3
6	CS23V35	Large Language Models	PEC	3	0	0	3	3
7	CS23V36	Game Development	PEC	3	0	0	3	3
8	CS23V37	Intelligence Process Automation	PEC	3	0	0	3	3

VERTICAL 4: ARTIFICIAL INTELLIGENCE

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	AD23V41	Cognitive Science	PEC	3	0	0	3	3
2	AD23V42	Generative AI	PEC	3	0	0	3	3
3	AD23V43	Pattern Recognition	PEC	3	0	0	3	3
4	AD23V24	Computer Vision	PEC	3	0	0	3	3
5	AD23V44	Recommender Systems	PEC	3	0	0	3	3
6	AD23V45	Reinforcement Learning	PEC	3	0	0	3	3
7	AD23V46	Text and Speech Analysis	PEC	3	0	0	3	3
8	AD23V28	Responsive AI	PEC	3	0	0	3	3

VERTICAL 5: FULL STACK DEVELOPMENT

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	CS23V25	Cloud Services Management	PEC	3	0	0	3	3
2	CS23V51	Agile and DevOps	PEC	3	0	0	3	3
3	CS23V52	Mobile App Development	PEC	3	0	0	3	3
4	CS23V53	MLOps	PEC	3	0	0	3	3
5	CS23V54	Software Testing and Automation	PEC	3	0	0	3	3
6	CS23V55	UI and UX Design	PEC	3	0	0	3	3
7	CS23V56	Web Application Security	PEC	3	0	0	3	3
8	CS23V57	Web Technologies	PEC	3	0	0	3	3

VERTICAL 6: SUPPLY CHAIN MANAGEMENT FOR INDUSTRIES

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	ME23V61	Industry 5.0	PEC	3	0	0	3	3
2	ME23V62	Planning in Logistics	PEC	3	0	0	3	3
3	ME23V63	Supply Chain Analytics	PEC	3	0	0	3	3
4	ME23V64	Supply Chain Information System	PEC	3	0	0	3	3
5	ME23V65	Supply Chain Management	PEC	3	0	0	3	3
6	ME23V66	Supply Chain for Manufacturing	PEC	3	0	0	3	3
7	ME23V67	Sustainable Inventory Management	PEC	3	0	0	3	3
8	ME23V68	Warehouse Automation	PEC	3	0	0	3	3

VERTICAL 7: CYBER SECURITY AND DATA PRIVACY

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	CS23V31	Cryptocurrency and Block chain Technologies	PEC	3	0	0	3	3
2	CS23V71	Digital and Mobile Forensics	PEC	3	0	0	3	3
3	CS23V72	Engineering Secure Software Systems	PEC	3	0	0	3	3
4	CS23V73	Ethical Hacking	PEC	3	0	0	3	3
5	CS23V74	Modern Cryptography	PEC	3	0	0	3	3
6	CS23V75	Network Security	PEC	3	0	0	3	3
7	CS23V26	Security and Privacy in Cloud	PEC	3	0	0	3	3
8	CS23V76	Social Network Security	PEC	3	0	0	3	3

OPEN ELECTIVES

(Students shall choose the open elective courses, such that the course contents are not similar to any other course contents/title under other course categories).

OPEN ELECTIVES – I

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	O23AD11	Programming for Data Science	OEC	3	0	0	3	3
2	O23AL11	Fundamentals of AI and ML	OEC	3	0	0	3	3
3	O23CB11	Software Testing	OEC	3	0	0	3	3
4	O23CC11	AI for Robotics	OEC	3	0	0	3	3
5	O23CS11	Introduction to Cloud Computing	OEC	3	0	0	3	3
6	O23EC11	Space Engineering	OEC	3	0	0	3	3
7	O23EC12	IT in Agricultural System	OEC	3	0	0	3	3
8	O23EV11	Fundamentals of VLSI	OEC	3	0	0	3	3
9	O23MA11	Probability and Statistics for Data Analytics	OEC	3	0	0	3	3
10	O23ME11	Foundation of Robotics	OEC	3	0	0	3	3

OPEN ELECTIVES – II

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	O23AD21	Data Science Fundamentals	OEC	3	0	0	3	3
2	O23AL21	Fundamentals of Data Analytics	OEC	3	0	0	3	3
3	O23CB21	Essentials of Digital Marketing	OEC	3	0	0	3	3
4	O23CC21	Space Science	OEC	3	0	0	3	3
5	O23CS21	Introduction to Cyber Security	OEC	3	0	0	3	3
6	O23EC21	Wearable Devices and its Applications	OEC	3	0	0	3	3
7	O23EC22	Introduction to IoT	OEC	3	0	0	3	3
8	O23EV21	Electrical, Electronics and Magnetic Materials	OEC	3	0	0	3	3
9	O23MA21	Optimization Techniques	OEC	3	0	0	3	3
10	O23ME21	Mechanical Foundations of Mechatronic Systems	OEC	3	0	0	3	3

OPEN ELECTIVES – III

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	O23AD31	AI for Industrial Applications	OEC	3	0	0	3	3
2	O23AL31	Information Technology Essentials	OEC	3	0	0	3	3
3	O23CB31	Start-up and Innovations	OEC	3	0	0	3	3
4	O23CC31	Introduction to R Programming	OEC	3	0	0	3	3
5	O23CS31	Introduction to Blockchain	OEC	3	0	0	3	3
6	O23EC31	Batteries and Management Systems	OEC	3	0	0	3	3
7	O23EC32	Basics of Biomedical Instrumentation	OEC	3	0	0	3	3
8	O23EV31	HDL Programming	OEC	3	0	0	3	3
9	O23MA31	Multivariate Data Analysis	OEC	3	0	0	3	3
10	O23ME31	Introduction to 3D Printing Technologies	OEC	3	0	0	3	3

SUMMARY

Name of the Programme : B.E. CSE (Artificial Intelligence and Machine Learning)										
Sl.No.	Subject Area	Credits per Semester								Total Credits
		I	II	III	IV	V	VI	VII	VIII	
1	HSMC	3	2					5		10
2	BSC	12	4	4	2					22
3	ESC	5	11	4			4			24
4	PCC		4	12	20	16	4	3		59
5	PEC					6	6	6		18
6	OEC						6		3	9
7	EEC		1	1	1	1	2	2	10	18
8	Non-Credit /(Mandatory)						✓	✓		
Total		20	22	21	23	23	22	16	13	160

ENROLLMENT FOR B.E. / B. TECH. (HONOURS) / MINOR DEGREE (OPTIONAL)

A student can also optionally register for additional courses (18 credits) and become eligible for the award of B.E. / B. Tech. (Honours) or Minor Degree.

For B.E. / B. Tech. (Honours), a student shall register for the additional courses (18 credits) from semester V onwards. These courses shall be from the same vertical or a combination of different verticals of the same programme of study only.

For minor degree, a student shall register for the additional courses (18 credits) from semester V onwards. All these courses have to be in a particular vertical from any one of the other programmes, Moreover, for minor degree the student can register for courses from any one of the following verticals also.

VERTICALS FOR MINOR DEGREE
(In addition to all the verticals of other programmes)

(Choice of courses for Minor degree is to be made from any one vertical of other programmes or from anyone of the following verticals)

Sl.No.	Vertical 1	Vertical 2	Vertical 3	Vertical 4
	Fintech and Blockchain	Entrepreneurship	Business Data Analytics	Internet of Things
1	CS23M01 Banking, Financial Services and Insurance	ME23M01 Foundations of Entrepreneurship	CB23M01 Data mining for Business Intelligence	EC23M01 IoT Architecture
2	CS23M02 Principles of Financial Management	ME23M02 Team Building and Leadership Management for Business	CB23M02 Financial Analytics	EC23M02 IoT Device Programming
3	CS23M03 Fintech Personal Finance and Payments	ME23M03 Creativity and Innovation in Entrepreneurship	CB23M03 Human Resource Analytics	EC23M03 IoT Foundations
4	CS23M04 Fundamentals of Investment	ME23M04 Principles of Marketing Management for Business	CB23M04 Marketing and Social Media Web Analytics	EC23M04 Industrial Internet of Things
5	CS23M05 Introduction to Blockchain and its Applications	ME23M05 Human Resource Management for Entrepreneurs	CB23M05 Operation and Supply Chain Analytics	EC23M05 IoT Protocols
6	CS23M06 Introduction to Fintech	ME23M06 Financing New Business Ventures	CB23M06 Statistics for Management	EC23M06 Sensor Technologies and IoT

VERTICAL 1: FINTECH AND BLOCK CHAIN

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	CS23M01	Banking, Financial Services and Insurance	PEC	3	0	0	3	3
2	CS23M02	Principles of Financial Management	PEC	3	0	0	3	3
3	CS23M03	Fintech Personal Finance and Payments	PEC	3	0	0	3	3
4	CS23M04	Fundamentals of Investment	PEC	3	0	0	3	3
5	CS23M05	Introduction to Blockchain and its Applications	PEC	3	0	0	3	3
6	CS23M06	Introduction to Fintech	PEC	3	0	0	3	3

VERTICAL 2: ENTREPRENEURSHIP

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	ME23M01	Foundations of Entrepreneurship	PEC	3	0	0	3	3
2	ME23M02	Team Building and Leadership Management for Business	PEC	3	0	0	3	3
3	ME23M03	Creativity and Innovation in Entrepreneurship	PEC	3	0	0	3	3
4	ME23M04	Principles of Marketing Management for Business	PEC	3	0	0	3	3
5	ME23M05	Human Resource Management for Entrepreneurs	PEC	3	0	0	3	3
6	ME23M06	Financing New Business Ventures	PEC	3	0	0	3	3

VERTICAL 3: BUSINESS DATA ANALYTICS

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	CB23M01	Data Mining for Business Intelligence	PEC	3	0	0	3	3
2	CB23M02	Financial Analytics	PEC	3	0	0	3	3
3	CB23M03	Human Resource Analytics	PEC	3	0	0	3	3
4	CB23M04	Marketing and Social Media Web Analytics	PEC	3	0	0	3	3
5	CB23M05	Operation and Supply Chain Analytics	PEC	3	0	0	3	3
6	CB23M06	Statistics for Management	PEC	3	0	0	3	3

VERTICAL 4: INTERNET OF THINGS

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	EC23M01	IoT Architecture	PEC	3	0	0	3	3
2	EC23M02	IoT Device Programming	PEC	3	0	0	3	3
3	EC23M03	IoT Foundations	PEC	3	0	0	3	3
4	EC23M04	Industrial Internet of Things	PEC	3	0	0	3	3
5	EC23M05	IoT Protocols	PEC	3	0	0	3	3
6	EC23M06	Sensor Technologies and IoT	PEC	3	0	0	3	3