STELLA MARY'S COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)
(Accredited by NAAC and Accredited by NBA(CSE & Mech))
Aruthenganvilai, Kallukatti Junction Azhikal Post, Kanyakumari District-629202, Tamil Nadu, South India.

(An Autonomous Institution)
REGULATIONS 2024
CHOICE BASED CREDIT

B.E. COMPUTER SCIENCE AND ENGINEERING

I. PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

Graduates can

- Apply their technical competence in computer science to solve real world problems, with technical and people leadership.
- Conduct cutting edge research and develop solutions on problems of social relevance.
- Work in a business environment, exhibiting team skills, work ethics, adaptability and lifelong learning.

II. 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.

III. PROGRAM SPECIFIC OUTCOMES (PSOs)

The Students will be able to

- Exhibit design and programming skills to build and automate business solutions using cutting edge technologies.
- Strong theoretical foundation leading to excellence and excitement towards research, to provide elegant solutions to complex problems.
- Ability to work effectively with various engineering fields as a team to design, build and develop system applications.

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REGULATIONS 2024
B. E. COMPUTER SCIENCE AND ENGINEERING
CHOICE BASED CREDIT SYSTEM
CURRICULUM AND SYLLABI FOR SEMESTERS I TO VIII
SEMESTER I

Sl. NO.	COURSE CODE	COURSETITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	24IP3151	Induction Programme	-	-	-	-	-	0
THEORY								
2.	24HS3152	Professional English-I	HSMC	3	0	0	3	3
3.	24MA3151	Matrices and Calculus	BSC	3	1	0	4	4
4.	24PH3151	Engineering Physics	BSC	3	0	0	3	3
5.	24CY3151	Engineering Chemistry	BSC	3	0	0	3	3
6.	24GE3151	Problem Solving and Python Programming	ESC	3	0	0	3	3
7.	24GE3152	தமிழர்களின் பாரம்பரியம் / Heritage of Tamils	HSMC	1	0	0	1	1
PRACTICALS								
8	24GE3171	Problem Solving and Python Programming Laboratory	ESC	0	0	4	4	2
9	24BS3171	Physics and Chemistry Laboratory	BSC	0	0	4	4	2
10	24GE3172	English Laboratory	EEC	0	0	2	2	1
MANDATORYCOURSE								
11.	24TP3101	Skill Enhancement - I	EEC	0	0	2	2	0
			TOTAL	16	1	12	29	22

SEMESTER II

Sl. NO.	COURSE CODE	COURSETITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	24HS3252	Professional English-II	HSMC	2	0	0	2	2
2.	24MA3251	Statistics and Numerical Methods	BSC	3	1	0	4	4
3.	24PH3256	Physics for Information Science	BSC	3	0	0	3	3
4.	24BE3251	Basic Electrical and Electronics Engineering	ESC	3	0	0	3	3
5.	24GE3251	Engineering Graphics	ESC	2	0	4	6	4
6.	24CS3251	Programming in C	PCC	3	0	0	3	3
7.	24GE3252	தமிழர்களும் ததாழில்நுட்பமும் /Tamils andTechnology	HSMC	1	0	0	1	1
8.		NCC Credit Course Level	-	2	0	0	2	2#
PRACTICALS								
9.	24GE3271	Engineering Practices Laboratory	ESC	0	0	4	4	2
10.	24CS3271	Programming in C Laboratory	PCC	0	0	4	4	2
11.	24GE3272	Communication Laboratory /Foreign Language	EEC	0	0	4	4	2
MANDATORYCOURSE								
12.	24TP3201	Skill Enhancement – II	EEC	0	0	2	2	0
		TOTAL		19	1	18	38	26

#NCC Credit Course level1 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	COURSETITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	24MA3354	Discrete Mathematics	BSC	3	1	0	4	4
2.	24CS3301	Data Structures	PCC	3	0	0	3	3
3.	24CS3302	Object Oriented Programming	PCC	3	0	0	3	3
THEORY CUM LAB								
4.	24CS3303	Digital Principles and Computer Organization	ESC	3	0	2	5	4
5.	24CS3304	Foundations of Data Science	PCC	3	0	2	5	4
6.	24CS3305	Database Design	PCC	2	0	2	4	3
PRACTICALS								
7.	24CS3311	Data Structures Laboratory	PCC	0	0	3	3	1.5
8.	24CS3312	Object Oriented Programming Laboratory	PCC	0	0	3	3	1.5
MANDATORY COURSE								
9.	24TP3301	Skill Enhancement- III	EEC	0	0	2	2	1
			TOTAL	17	1	14	32	25

SEMESTER IV

Sl. NO.	COURSE CODE	COURSETITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	24CS3401	Theory of Computation	PCC	3	1	0	4	4
2.	24CS3402	Introduction to Operating Systems	PCC	3	0	0	3	3
THEORY CUM LAB								
3.	24CS3403	Artificial Intelligence and Machine Learning	PCC	3	0	2	5	4
4.	24CS3404	Algorithms	PCC	3	0	2	5	4
5.	24CS3405	Networking Essentials	PCC	3	0	2	5	4

6.	24IC3401	Engineering Entrepreneurship Development	IC	2	0	2	4	3
PRACTICALS								
7.	24CS3411	Operating Systems Laboratory	PCC	0	0	4	4	2
MANDATORY COURSE								
8.	24TP3401	Skill Enhancement- IV	EEC	0	0	2	2	1
			TOTAL	**17**	**1**	**14**	**32**	**25**

 # 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	COURSETITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	24CS3501	Distributed Computing	PCC	3	0	0	3	3
2.		Open Elective–I	OEC	3	0	0	3	3
3.		Professional Elective I	PEC	3	0	0	3	3
THEORY CUM LAB								
4.	24CS3502	Cryptography and Cyber Security	PCC	3	0	2	5	4
5.	24CS3503	Compiler Design	PCC	3	0	2	5	4
6.	24CS3504	Cloud Foundations	PCC	3	0	2	5	4
MANDATORYCOURSE								
7.		Mandatory Courses –I	MC	3	0	0	3	0
8.	24TP3501	Skill Enhancement- V	EEC	0	0	2	2	1
			TOTAL	**21**	**0**	**8**	**29**	**22**

SEMESTER VI

Sl. NO.	COURSE CODE	COURSETITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Open Elective–II	OEC	3	0	0	3	3
2.		Professional Elective II	PEC	3	0	0	3	3
3.		Professional Elective III	PEC	3	0	0	3	3
THEORY CUM LAB								
4.	24CS3601	Object Oriented Software Engineering	PCC	3	0	2	5	4
5.	24CS3602	Embedded Systems and IoT	PCC	3	0	2	5	4
MANDATORYCOURSE								
6.		Mandatory Courses –II	MC	2	0	0	2	0
7.	24TP3601	Skill Enhancement- VI	EEC	0	0	2	2	1
		TOTAL		**17**	**0**	**6**	**23**	**18**

*Open Elective – I 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	COURSETITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	24GE3791	Human Values and Ethics	HSMC	2	0	0	2	2
2.	24GE3751	Principles of Management	HSMC	3	0	0	3	3
3.	24CS3701	Software Testing	PCC	3	0	0	3	3
4.		Professional Elective IV	PEC	3	0	0	3	3
5.		Professional Elective V	PEC	3	0	0	3	3
6.		Professional Elective VI	PEC	3	0	0	3	3
PRACTICALS								
7.	24CS3711	Internship	EEC	0	0	4	4	2
MANDATORYCOURSE								
8.	24TP3701	Skill Enhancement- VII	EEC	0	0	2	2	1
			TOTAL	17	0	6	23	20

*If students undergo internship in Semester VII, then the courses offered during semester VII will be offered during semester VIII.

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

SEMESTER VIII

Sl. NO.	COURSE CODE	COURSETITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	24CS3811	Project Work/Internship	EEC	0	0	20	20	10
			TOTAL	0	0	20	20	10

*If students undergo internship in Semester VII, then the courses offered during semester VII will be offered during semester VIII.

TOTAL CREDITS: 168

MANDATORY COURSES – I

Sl. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	24MX3081	Introduction to Women and Gender Studies	MC	3	0	0	3	0
2.	24MX3082	Indian knowledge systems	MC	3	0	0	3	0
3.	24MX3083	Production and Operations Management for Entrepreneurs	MC	3	0	0	3	0
4.	24MX3084	Disaster Risk Reduction and Management	MC	3	0	0	3	0
5.	24MX3085	Well -being with traditional practices-yoga, ayurveda And siddha	MC	3	0	0	3	0

MANDATORY COURSES II

Sl. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	24MX3086	Environmental Sciences and Sustainability	MC	3	0	0	3	0
2.	24MX3087	History of Science and Technology in India	MC	3	0	0	3	0
3.	24MX3088	Political and Economic Thought for a Humane Society	MC	3	0	0	3	0
4.	24MX3089	State, Nation Building and Politics in India	MC	3	0	0	3	0
5.	24MX3090	Industrial Safety	MC	3	0	0	3	0

PROFESSIONAL ELECTIVE COURSES: VERTICALS

Vertical I Data Science	Vertical II Full Stack Development	Vertical III Cloud Computing and Data Center Technologies	Vertical IV Cyber Security and Data Privacy	Vertical V Creative Media	Vertical VI Emerging Technologies
Exploratory Data Analysis	Web Technologies	Cloud Computing	Ethical Hacking	Augmented Reality/Virtual Reality	Augmented Reality/Virtual Reality
Recommender Systems	App Development	Virtualization	Digital and Mobile Forensics	Multimedia and Animation	Robotic Process Automation
Neural Networks and Deep Learning	Cloud Services Management	Cloud Services Management	Social Network Security	Video Creation and Editing	Neural Networks and Deep Learning
Text and Speech Analysis	UI and UX Design	Data Warehousing	Modern Cryptography	UI and UX Design	Cyber security
Business Analytics	Software Testing and Automation	Storage Technologies	Engineering Secure Software Systems	Digital marketing	Quantum Computing
Image and Video Analytics	Web Application Security	Software Defined Networks	Cryptocurrency and Blockchain Technologies	Visual Effects	Cryptocurrency and Blockchain Technologies
Computer Vision	DevOps	Stream Processing	Network Security	Game Development	Game Development
Big Data Analytics	Principles of Programming Languages	Security and Privacy in Cloud	Security and Privacy in Cloud	Multimedia Data Compression and Storage	3D Printing and Design

<u>Registration of Professional Elective Courses from Verticals:</u>

Professional Elective Courses will be registered in Semesters V and VI. These courses are listed in groups called verticals that represent a particular area of specialisation / diversified group. Students are permitted to choose all the Professional Electives from a particular vertical or from different verticals. Further, only one Professional Elective course shall be chosen in a semester horizontally (row-wise). However, two courses are permitted from the same row, provided one course is enrolled in Semester V and another in semester VI.

The registration of courses for B.E./B.Tech (Honours) or Minor degree shall be done from Semester V to VIII. The procedure for registration of courses explained above shall be followed for the courses of B.E/B.Tech (Honours) or Minor degree also. For more details on B.E./B.Tech (Honours) or Minor degree refer to the Regulations 2021, Clause 4.10 (Amendments).

PROFESSIONAL ELECTIVE COURSES: VERTICALS

VERTICAL 1: DATA SCIENCE

Sl. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDI TS
				L	T	P		
1.	24CCS346	Exploratory Data Analysis	PEC	2	0	2	4	3
2.	24CCS360	Recommender Systems	PEC	2	0	2	4	3
3.	24CCS355	Neural Networks and Deep Learning	PEC	2	0	2	4	3
4.	24CCS369	Text and Speech Analysis	PEC	2	0	2	4	3
5.	24CCW331	Business Analytics	PEC	2	0	2	4	3
6.	24CCS349	Image and Video Analytics	PEC	2	0	2	4	3
7.	24CCS338	Computer Vision	PEC	2	0	2	4	3
8.	24CCS334	Big Data Analytics	PEC	2	0	2	4	3

VERTICAL 2: FULL STACK DEVELOPMENT

Sl. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	24CCS375	Web Technologies	PEC	2	0	2	4	3
2.	24CCS332	App Development	PEC	2	0	2	4	3
3.	24CCS336	Cloud Services Management	PEC	2	0	2	4	3
4.	24CCS370	UI and UX Design	PEC	2	0	2	4	3
5.	24CCS366	Software Testing and Automation	PEC	2	0	2	4	3
6.	24CCS374	Web Application Security	PEC	2	0	2	4	3
7.	24CCS342	DevOps	PEC	2	0	2	4	3

Sl. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
8.	24CCS358	Principles of Programming Languages	PEC	3	0	0	3	3

VERTICAL 3: CLOUD COMPUTING AND DATA CENTER TECHNOLOGIES

Sl. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	24CCS335	Cloud Computing	PEC	2	0	2	4	3
2.	24CCS372	Virtualization	PEC	2	0	2	4	3
3.	24CCS336	Cloud Services Management	PEC	2	0	2	4	3
4.	24CCS341	Data Warehousing	PEC	2	0	2	4	3
5.	24CCS367	Storage Technologies	PEC	3	0	0	3	3
6.	24CCS365	Software Defined Networks	PEC	2	0	2	4	3
7.	24CCS368	Stream Processing	PEC	2	0	2	4	3
8.	24CCS362	Security and Privacy in Cloud	PEC	2	0	2	4	3

VERTICAL 4: CYBER SECURITY AND DATA PRIVACY

Sl. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	24CCS344	Ethical Hacking	PEC	2	0	2	4	3
2.	24CCS343	Digital and Mobile Forensics	PEC	2	0	2	4	3
3.	24CCS363	Social Network Security	PEC	2	0	2	4	3
4.	24CCS351	Modern Cryptography	PEC	2	0	2	4	3
5.	24CB3591	Engineering Secure Software Systems	PEC	2	0	2	4	3
6.	24CCS339	Cryptocurrency and Blockchain Technologies	PEC	2	0	2	4	3
7.	24CCS354	Network Security	PEC	2	0	2	4	3
8.	24CCS362	Security and Privacy in Cloud	PEC	2	0	2	4	3

VERTICAL 5: CREATIVE MEDIA

Sl. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	24CCS333	Augmented Reality/Virtual Reality	PEC	2	0	2	4	3
2.	24CCS352	Multimedia and Animation	PEC	2	0	2	4	3
3.	24CCS371	Video Creation and Editing	PEC	2	0	2	4	3
4.	24CCS370	UI and UX Design	PEC	2	0	2	4	3
5.	24CCW332	Digital marketing	PEC	2	0	2	4	3
6.	24CCS373	Visual Effects	PEC	2	0	2	4	3
7.	24CCS347	Game Development	PEC	2	0	2	4	3
8.	24CCS353	Multimedia Data Compression and Storage	PEC	2	0	2	4	3

VERTICAL 6: EMERGING TECHNOLOGIES

Sl. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	24CCS333	Augmented Reality/Virtual Reality	PEC	2	0	2	4	3
2.	24CCS361	Robotic Process Automation	PEC	2	0	2	4	3
3.	24CCS355	Neural Networks and Deep Learning	PEC	2	0	2	4	3
4.	24CCS340	Cyber security	PEC	2	0	2	4	3
5.	24CCS359	Quantum Computing	PEC	2	0	2	4	3
6.	24CCS339	Cryptocurrency and Blockchain Technologies	PEC	2	0	2	4	3
7.	24CCS347	Game Development	PEC	2	0	2	4	3
8.	24CCS331	3D Printing and Design	PEC	2	0	2	4	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.
** Students are not permitted to opt for Open Elective (OE) courses offered by their parent department.]

SI. No.	Course Code	Course Title	Category	L	T	P	C
OPEN ELECTIVE-I							
1	24OEEE01	Semiconductor Memories	OEC	3	0	0	3
2	24OEEE02	Electrical Safety and Safety Management	OEC	3	0	0	3
3	24OEEC01	IoT Concepts and Applications	OEC	2	0	2	3
4	24OEEC02	Drone Technologies	OEC	3	0	0	3
5	24OECE01	Plastic and E-Waste Management	OEC	3	0	0	3
6	24OECE02	Remote Sensing and GIS Applications in Environmental Management	OEC	3	0	0	3
7	24OECS01	Advanced Java Technologies	OEC	3	0	0	3
8	24OECS02	Machine Learning Paradigms	OEC	3	0	0	3
9	24OEME01	Fundamentals of Aeronautical Engineering	OEC	3	0	0	3
10	24OEME02	Energy Technology	OEC	3	0	0	3
11	24OEAD01	Artificial Intelligence and Machine Learning Fundamentals	OEC	3	0	0	3
12	24OEAD02	Business Intelligence and its Applications	OEC	3	0	0	3

		OPEN ELECTIVE-II					
SI. No.	Course Code	Course Title	Category	L	T	P	C
1	24OEEE03	Energy Storage Systems	OEC	3	0	0	3
2	24OEEE04	Energy Management and Auditing	OEC	3	0	0	3
3	24OEEC03	Robotic Process Automation	OEC	2	0	2	3
4	24OEEC04	Fundamentals of Embedded and IoT	OEC	2	0	2	3
5	24OECE03	Green Building Design	OEC	3	0	0	3
6	24OECE04	Safety in Construction	OEC	3	0	0	3
7	24OECS03	IoT and Edge Computing	OEC	3	0	0	3
8	24OECS04	IT in Agricultural System	OEC	3	0	0	3
9	24OEME03	Environmental Engineering and Pollution Control	OEC	3	0	0	3
10	24OEME04	Elements of Marine Engineering	OEC	3	0	0	3
11	24OEAD03	Augmented Reality / Virtual Reality	OEC	3	0	0	3
12	24OEAD04	Digital Forensics	OEC	3	0	0	3

SUMMARY

Sl. No	Subject Area	Credits per Semester								Total Credits
		I	II	III	IV	V	VI	VII/ VIII	VIII/ VII	
1	HSMC	4	3					5		12
2	BSC	12	7	4						23
3	ESC	5	9	4						18
4	PCC		5	16	21	15	8	3		68
5	PEC					3	6	9		18
6	OEC					3	3			6
7	EEC	1	2	1	1	1	1	3	10	20
8	IC				3					3
9	Non-Credit /(Mandatory)					√	√			
	Total	22	26	25	25	22	18	20	10	168

Name of the Programme: B.E. Computer Science and Engineering

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)

Vertical I Fintech and Block Chain	Vertical II Entrepreneurship	Vertical III Public Administration	Vertical IV Business Data Analytics	Vertical V Environment and Sustainability
Financial Management	Foundations of Entrepreneurship	Principles of Public Administration	Statistics for Management	Sustainable infrastructure Development
Fundamentals of Investment	Team Building & Leadership Management for Business	Constitution of India	Datamining for Business Intelligence	Sustainable Agriculture and Environmental Management
Banking, Financial Services and Insurance	Creativity & Innovation in Entrepreneurship	Public Personnel Administration	Human Resource Analytics	Sustainable Bio Materials
Introduction to Blockchain and its Applications	Principles of Marketing Management for Business	Administrative Theories	Marketing and Social Media Web Analytics	Materials for Energy Sustainability
Fintech Personal Finance and Payments	Human Resource Management for Entrepreneurs	Indian Administrative System	Operation and Supply Chain Analytics	Green Technology
Introduction to Fintech	Financing New Business Ventures	Public Policy Administration	Financial Analytics	Environmental Quality Monitoring and Analysis
-	-	-	-	Integrated Energy Planning for Sustainable Development
-	-	-	-	Energy Efficiency for Sustainable Development

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

VERTICAL 1: FINTECH AND BLOCK CHAIN

SL. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTA CT PERIOD S	CREDITS
				L	T	P		
1.	24CMG331	Financial Management	PEC	3	0	0	3	3
2.	24CMG332	Fundamentals of Investment	PEC	3	0	0	3	3
3.	24CMG333	Banking, Financial Services and Insurance	PEC	3	0	0	3	3
4.	24CMG334	Introduction to Blockchain and its Applications	PEC	3	0	0	3	3
5.	24CMG335	Fintech Personal Finance and Payments	PEC	3	0	0	3	3
6.	24CMG336	Introduction to Fintech	PEC	3	0	0	3	3

VERTICAL 2: ENTREPRENEURSHIP

SL. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTA CT PERIO DS	CREDITS
				L	T	P		
1.	24CMG337	Foundations of Entrepreneurship	PEC	3	0	0	3	3
2.	24CMG338	Team Building & Leadership Management for Business	PEC	3	0	0	3	3
3.	24CMG339	Creativity & Innovation in Entrepreneurship	PEC	3	0	0	3	3
4.	24CMG340	Principles of Marketing	PEC	3	0	0	3	3

SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	TOTAL CONTACT PERIODS	CREDITS
		Management For Business						
5.	24CMG341	Human Resource Management for Entrepreneurs	PEC	3	0	0	3	3
6.	24CMG342	Financing New Business Ventures	PEC	3	0	0	3	3

VERTICAL 3: PUBLIC ADMINISTRATION

SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	24CMG343	Principles of Public Administration	PEC	3	0	0	3	3
2.	24CMG344	Constitution of India	PEC	3	0	0	3	3
3.	24CMG345	Public Personnel Administration	PEC	3	0	0	3	3
4.	24CMG346	Administrative Theories	PEC	3	0	0	3	3
5.	24CMG347	Indian Administrative System	PEC	3	0	0	3	3
6.	24CMG348	Public Policy Administration	PEC	3	0	0	3	3

VERTICAL 4: BUSINESS DATA ANALYTICS

SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	24CMG349	Statistics for Management	PEC	3	0	0	3	3
2.	24CMG350	Datamining For Business	PEC	3	0	0	3	3

SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	Periods Per Week			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
		Intelligence						
3.	24CMG351	Human Resource Analytics	PEC	3	0	0	3	3
4.	24CMG352	Marketing and Social Media Web Analytics	PEC	3	0	0	3	3
5.	24CMG353	Operation and Supply Chain Analytics	PEC	3	0	0	3	3
6.	24CMG354	Financial Analytics	PEC	3	0	0	3	3

VERTICAL 5: ENVIRONMENT AND SUSTAINABILITY

SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	24CES331	Sustainable infrastructure Development	PEC	3	0	0	3	3
2.	24CES332	Sustainable Agriculture and Environmental Management	PEC	3	0	0	3	3
3.	24CES333	Sustainable Bio Materials	PEC	3	0	0	3	3
4.	24CES334	Materials for Energy Sustainability	PEC	3	0	0	3	3
5.	24CES335	Green Technology	PEC	3	0	0	3	3
6.	24CES336	Environmental Quality Monitoring and Analysis	PEC	3	0	0	3	3
7.	24CES337	Integrated Energy Planning for Sustainable Development	PEC	3	0	0	3	3

8.	24CES338	Energy Efficiency for Sustainable Development	PEC	3	0	0	3	3