B. TECH. FOUR YEAR DEGREE

PROGRAM CURRICULUM

(Applicable for the batches admitted from A.Y 2025-26)

MINING ENGINEERING

ADITYA UNIVERSITY

Aditya Nagar, ADB Road, Surampalem - 533 437

ADITYA UNIVERSITY

Department of Mining Engineering

Department Vision

To be a globally recognized center of excellence in Mining Engineering education fostering innovation, sustainable practices, and inclusive growth.

Department Mission

M1: Enhance mining education through transformative learning, expert faculty, and a vibrant research ecosystem.

M2: Develop cutting-edge laboratories and industry collaborations that promote innovation.

M3: Apply sustainable practices to address global challenges.

Program Educational Objectives (PEOS)

Graduates of the Program will

PEO 1: Excel as Mining Engineering professionals with innovation and leadership.

PEO 2: Create cutting-edge solutions for Mining Engineering problems.

PEO 3: Engage in lifelong learning in the evolving mining industry.

Program Specific Outcomes (PSOS)

After successful completion of the program, the graduates will be able to

PSO 1: Solve Mining & Mineral engineering problems.

PSO 2: Plan, manage, and ensure safety of mining operations.

PROGRAM OUTCOMES (PO's)

The 11 Program Outcomes are described as below.

After successful completion of the program, the graduates will be able to

PO1 **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2 **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

PO3 **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

PO4 **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

PO5 **Engineering 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

PO6 **The Engineer and the world :** 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

PO7 **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice

PO8 **Individual and collaborative teamwork**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings

PO9 **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.

PO10 **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.

PO11 **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.

Department of Mining Engineering
B. Tech (Min.E) Program Curriculum - 2025
(Applicable for the batches admitted from A.Y 2025-26)

UG Programs Offered

- B. Tech in (Mining Engineering)

- B. Tech in (Mining Engineering) with

    - Minor degree in Civil Engineering
    - Minor degree in Electrical and Electronics Engineering
    - Minor degree in Mechanical Engineering
    - Minor degree in Electronics and Communication Engineering
    - Minor degree in Computer Science and Engineering
    - Minor degree in Data Science
    - Minor degree in Artificial Intelligence and Machine Learning
    - Minor degree in Petroleum Technology
    - Minor degree in Agricultural Engineering
    - Minor degree in Entrepreneurship Development and Incubation
    - Minor degree in Quantum Technologies

Minor Stream offered in B. Tech (Mining Engineering)

- Minor Stream in Environment and Safety in Mining
- Minor Stream in Innovative Mining

Credit Division Category-wise

S. No.	Broad Category of Course	UGC	Credits
1	Major (Core) Courses (MCC)	80	80
2	Minor Stream Courses (MSC) (or) University Open Elective Courses (UEC)	32	32
3	Multidisciplinary Courses (MDC)	09	10
4	Ability Enhancement Courses (AEC)	08	09
5	Skill Enhancement Courses (SEC)	09	09
6	Value Added Courses (VAC)	6-8	04
7	Summer Internship (SI)	2-4	04
8	Full Semester Internship (PROJ)	12	12
9	Mandatory Course (MC)	00	00
Total Credits to be earned for B. Tech Degree		**160**	**160**

Foundation Courses – FC

Intermediate-level Courses - IC

Advanced Courses – AC

Major (Core) Courses										
Course Code	**Course Name**	**Level**	**L**	**T**	**P**	**C**	**CIE**	**SEE**	**Total**	**Pre-requisite**
2501PH01	Solid State Physics	FC	2		1	3	50	50	100	-
2501CH01	Engineering Chemistry	FC	2		1	3	50	50	100	-
2501MA01	Linear Algebra & Calculus	FC	2		1	3	50	50	100	-
2501ME02	Engineering Mechanics	FC	3		1	4	50	50	100	-
2501ME03	Engineering Workshop	FC			1	1	100		100	-
2501ME01	Engineering Graphics	FC	1		2	3	50	50	100	-
2501MA02	Differential Equations & Vector Calculus	FC	2		1	3	50	50	100	LAC
2501MN01	Introduction to Mechanical Engineering	FC	2		1	3	50	50	100	EM
2501MN02	Introduction to Mining Geology	FC	2		2	4	50	50	100	-
2501MN03	Development of Mineral Deposits	FC	3			3	50	50	100	-
2501MN04	Fundamental of Rock Mechanics	FC	3		2	5	50	50	100	-
2501MA05	Numerical Methods & Integral Transforms	IC	2	1		3	50	50	100	-
2501MA06	Complex Variables & Statistical Methods	IC	3	1		4	50	50	100	-
2501MB02	Engineering Economics	IC	3			3	50	50	100	-
2501MN05	Mine Surveying	IC	3		2	5	50	50	100	-
2501MN06	Surface Mining	IC	3			3	50	50	100	DMD
2501MN07	Underground Coal Mining Technology	IC	3			3	50	50	100	DMD

2501MN08	Underground Metal Mining Technology	IC	3			3	50	50	100	DMD
2501MN09	Mineral Processing Technology	IC	2		2	4	50	50	100	-
2501MN10	Mine Hazards & Rescue	IC	3		1	4	50	50	100	-
2501MN11	Mine Environment & Ventilation Engineering	AC	2		2	4	50	50	100	-
2501MN12	Mine Machinery	AC	3			3	50	50	100	DMD, SM, UCMT, UMMT
2501MN13	Mine System Engineering	AC	3			3	50	50	100	SM
2501MN14	Mine Legislation & General Safety	AC	3			3	50	50	100	UCMT/UMMT
Total			**58**	**2**	**20**	**80**				

Multidisciplinary Courses (MDC)

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501EE01	Basic Electrical & Electronics Engineering	FC	2		2	4	50	50	100	-
2501IT01	Business Intelligence Lab	FC			2	2	50	50	100	-
2501CS01	Programming for Problem Solving Using C	FC	2		2	4	50	50	100	-
Total			**4**		**6**	**10**				

Ability Enhancement Courses (AEC)

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501EN01	Essential Cognitive Skills for Engineers	FC			1	1	100	-	100	-
2501EN02/ 2501UC05/ 2501UC04/ 2501UC03/ 2501UC06	Advanced Cognitive Skills for Engineers (or) Proficiency in Foreign Language ((Japanese/ German/ French/ Spanish)	FC			1	1	100	-	100	-
2501UC07	Design Thinking using AI	FC			1	1	100	-	100	-

2501UC08	Universal Human Values	FC	2			2	100	-	100	-
2501UC09	Technical Paper Publication	AC			2	2	100	-	100	-
2501MN47	Student Activity Based Learning	AC			2	2				
Total			**2**		**7**	**9**				

Skill Enhancement Courses (SEC)

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501MN15	Mine Water Pollution & Control	IC			2	2	50	50	100	-
2501MN16	Mine Automation	IC			1	1	100	-	100	-
2501MN17	Mine Planning	AC			2	2	50	50	100	-
2501MN18	Mine Automation & Virtual Reality	AC			2	2	50	50	100	-
2501MN19	Software Applications in Mining Engineering	AC			2	2	50	50	100	-
Total					**9**	**9**				

Value Added Courses (VAC)

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501CS02	Data Analysis using Python	IC			2	2	50	50	100	PPSC
2501CS04	Internet of Things	FC			1	1	50	50	100	-
2501UC11	Employability Skills – I	FC			3	0	100	-	100	-
2501UC13	Employability Skills – II	FC			3	0	100	-	100	ES-I
2501UC14	Employability Skills – III	IC			3	0	100	-	100	ES-II
2501UC15	Employability Skills – IV	IC			3	0	100	-	100	ES-III
2501UC16	Employability Skills - V	AC			3	1	100	-	100	ES-IV
Total					**18**	**4**				

Summer Internships (SI)

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501MN20	Summer Internship – I	IC			2	2	100		100	-
2501MN21	Summer Internship - II	AC			2	2	100		100	-
Total					4	**4**				

Full Semester Internship (PROJ)

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501MN22	Full Semester Internship	AC			12	12	50	50	100	-
Total					12	**12**				

Mandatory Courses (MC)

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501AC01	Environmental Science	FC	2			0	100	-	100	-
2501AC02	Constitution of India	FC	2			0	100	-	100	-
2501AC03	Research Methodology	FC	2			0	100	-	100	-
2501AC04	Intellectual Property Rights & Patents	FC	2			0	100	-	100	-
2501AC05	Indian Knowledge Systems	FC	2			0	100	-	100	-
	Total		**10**			**0**				

Minor Stream: Environment and Safety in Mining

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501MN23	Sustainable Mining	FC	3			3	50	50	100	DMD
2501MN24	Drilling & Blasting	IC	3			3	50	50	100	DMD
2501MN25	Safety Practices in Mines	IC	3			3	50	50	100	UCMT
2501MN26	Environmental Impact Assessment	IC	3			3	50	50	100	SM
2501MN27	Mine Health & Safety Engineering	IC	3			3	50	50	100	SPM
2501MN28	Environmental Pollution & Control	IC	3			3	50	50	100	UCMT/UMMT

2501MN29	Industrial Safety	IC	3			3	50	50	100	
2501MN30	Waste Water Treatment & Recycling	IC	3			3	50	50	100	
2501MN31	Environment & Safety	IC	3			3	50	50	100	
2501MN32	Planning for Mine Closure & Reclamation	AC	3			3	50	50	100	SM
2501MN33	Safety Engineering	AC	2			2	50	50	100	MHSE
Total			**32**			**32**				

Minor Stream: Innovative Mining

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501MN34	Planning for Mining Projects	FC	3			3	50	50	100	DMD
2501MN35	Geo-Statistics	IC	3			3	50	50	100	DMD
2501MN36	Mineral Economics	IC	3			3	50	50	100	DMD
2501MN37	Advanced Exploration Techniques	IC	3			3	50	50	100	DMD
2501MN38	Advanced Surveying Technology	IC	3			3	50	50	100	MS
2501MN39	Geo Spatial Imaging & Geo- informatics	IC	3			3	50	50	100	
2501MN40	Remote Sensing Applications in Mining	IC	3			3	50	50	100	
2501MN41	Green Mining	IC	3			3	50	50	100	
2501MN42	Utilisation of Alternative Sources of Energy	IC	3			3	50	50	100	
2501MN43	Deep Sea Mining	AC	3			3	50	50	100	DMD
2501MN44	Space Mining Technology	AC	2			2	50	50	100	-
Total			**32**			**32**				

UNIVERSITY OPEN ELECTIVE COURSES (UEC)

AI & ML											
Course Code	**Course Name**	**Level**	**L**	**T**	**P**	**C**	**CIE**	**SEE**	**Total**	**Offered to Programs**	**Pre-requisite**
2501AI02	Artificial Intelligence	FC	2		1	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	DAP
2501AI05	Machine Learning	FC	2		2	4	50	50	100	CE, EEE, ME, ECE, PT, Min. E	DAP
2501AI27	AI & Data Science	IC	2		1	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	DAP
2501AI28	AI in Healthcare	IC	2		1	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE (DS) PT, Min. E	DAP
2501AI11	Deep Learning	IC	2		2	4	50	50	100	CE, EEE, ME, ECE, PT, Min. E	DAP
2501AI10	Natural Language Processing	IC	2		1	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	DAP
2501AI09	Reinforcement Learning	AC	1		2	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	DAP
2501AI29	AI in Agriculture	AC	2		1	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	DAP
2501AI30	Robotics & AI	AC	2		1	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	DAP
2501AI31	AI in Finance & Economics	AC	2		1	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS), PT, Min. E	DAP
Total			**19**		**13**	**32**					

Production Excellence											
Course Code	**Course Name**	**Level**	**L**	**T**	**P**	**C**	**CIE**	**SEE**	**Total**	**Offered to Programs**	**Pre-requisite**
2501ME81	Fundamentals of Production Excellence	FC	2			2	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501ME82	Six Sigma for Production Excellence	FC	2		1	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	FPE
2501ME83	Quality Excellence in Production	IC	2		1	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	FPE
2501ME84	Digital Transformation for Production Excellence	IC	2		1	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	FPE
2501ME85	Agile Production Systems	IC	2		1	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	FPE
2501ME86	Process Excellence & Optimization	IC	2		1	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	FPE
2501ME87	Risk Management in Production Excellence	AC	2		1	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS)	FPE

										PT, Min. E	
2501ME88	Ethical & Social Responsibility in Production Excellence	AC	2		1	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	FPE
2501ME89	Data-Driven Decision Making for Production Excellence	AC	2		1	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min E	FPE
2501ME58	Industry 5.0 for Engineers	AC	3			3	50	50	100	CE, EEE, ECE, CSE, IT, AIML, CSE(DS) PT, Min E	FPE
2501ME90	Cost Excellence in Production	AC	2		1	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	FPE
Total			**23**		**9**	**32**					

Supply Chain Management											
Course Code	**Course Name**	**Level**	**L**	**T**	**P**	**C**	**CIE**	**SEE**	**Total**	**Offered to Programs**	**Pre-requisite**
2501MB17	Introduction to Supply Chain Management	FC	2			2	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501MB18	Logistics & Distribution Management	FC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	ISCM

2501MB19	Supply Chain Project Management	IC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	ISCM
2501MB20	Supply Chain Innovation &Trends	IC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	ISCM
2501MB21	Supply Chain Analytics	IC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	ISCM
2501MB22	Demand Planning & Forecasting	IC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	ISCM
2501MB23	Supply Chain Risk Management	AC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	ISCM
2501MB24	Inventory Management & Control	AC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	ISCM
2501MB25	E-Commerce & Supply Chain Management	AC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	ISCM
2501MB26	Operations Management	AC	3			3	50	50	100	CE, EEE, ME, ECE,	ISCM

										CSE, IT, AIML, CSE(DS) PT, Min. E	
2501MB27	Supply Chain Ethics & Corporate Social Responsibility (CSR)	AC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	ISCM
Total			**32**			**32**					

Sustainability											
Course Code	**Course Name**	**Level**	**L**	**T**	**P**	**C**	**CIE**	**SEE**	**Total**	**Offered to Programs**	**Pre-requisite**
2501CE74	Introduction to Sustainable Development	FC	2			2	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501CE66	Natural Disaster Management & Mitigation	FC	3			3	50	50	100	EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501CE62	Waste Water Management	IC	3			3	50	50	100	EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501CE59	Integrated Solid Waste Management for a Smart City	IC	3			3	50	50	100	EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501CE58	Watershed Management	IC	3			3	50	50	100	EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501EE33	Energy Audit, Conservation & Management	IC	3			3	50	50	100	CE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	BEEE

2501EE53	Electric Power Generation, Transmission & Distribution Systems	AC	3			3	50	50	100	CE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	BEEE
2501CE75	Sustainable Agriculture & Food Systems	AC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501CE76	Sustainable Supply Chain Management	AC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501CE77	Sustainable Production Excellence	AC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501CE78	AI in Environmental Science and Sustainability	AC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
Total			**32**			**32**					

Security											
Course Code	**Course Name**	**Level**	**L**	**T**	**P**	**C**	**CIE**	**SEE**	**Total**	**Offered to Programs**	**Pre-requisite**
2501CS32	Cybersecurity Essentials	FC	2		1	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501IT35	Security in Software Development	FC	3			3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501CS28	Ethical Hacking	IC	2		1	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501CS69	Cloud Security	IC			3	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-

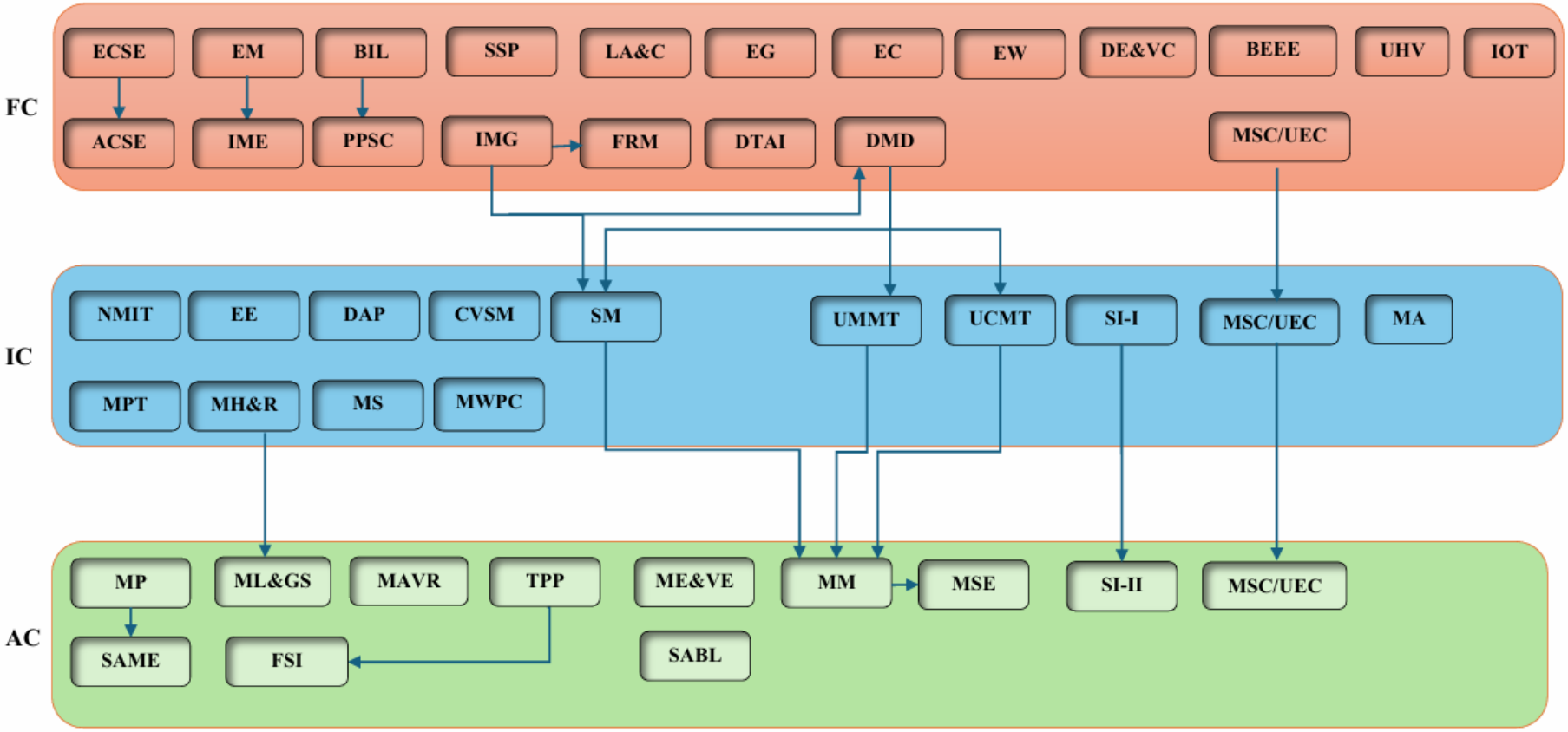
2501IT36	Security &Compliance in Business	IC	3			3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501IT37	Cryptography & Data Security	IC	2		1	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501IT38	Security Awareness & Social Engineering	AC	2		1	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501IT39	Cybersecurity Policy & Strategy	AC	3			3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501IT40	Security in Emerging Technologies	AC	3			3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501CS30	Information Security Analysis & Audit	AC	2			2	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501IT41	Financial Information Security & Privacy	AC	3			3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
Total			**25**		**07**	**32**					

Others											
Course Code	**Course Name**	**Level**	**L**	**T**	**P**	**C**	**CIE**	**SEE**	**Total**	**Offered to Programs**	**Pre-requisite**
2501CE65	Remote Sensing & GIS Applications	FC	3			3	50	50	100	EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501EE36	Electric Energy Storage Systems	FC	3			3	50	50	100	CE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	BEEE
2501EE43	Electrical safety	IC	3			3	50	50	100	CE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	BEEE
2501EE54	Hybrid & Electric Vehicles	IC	3			3	50	50	100	CE, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	BEEE
2501ME73	Organizational Behaviour	FC	3			3	50	50	100	CE, EEE, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-

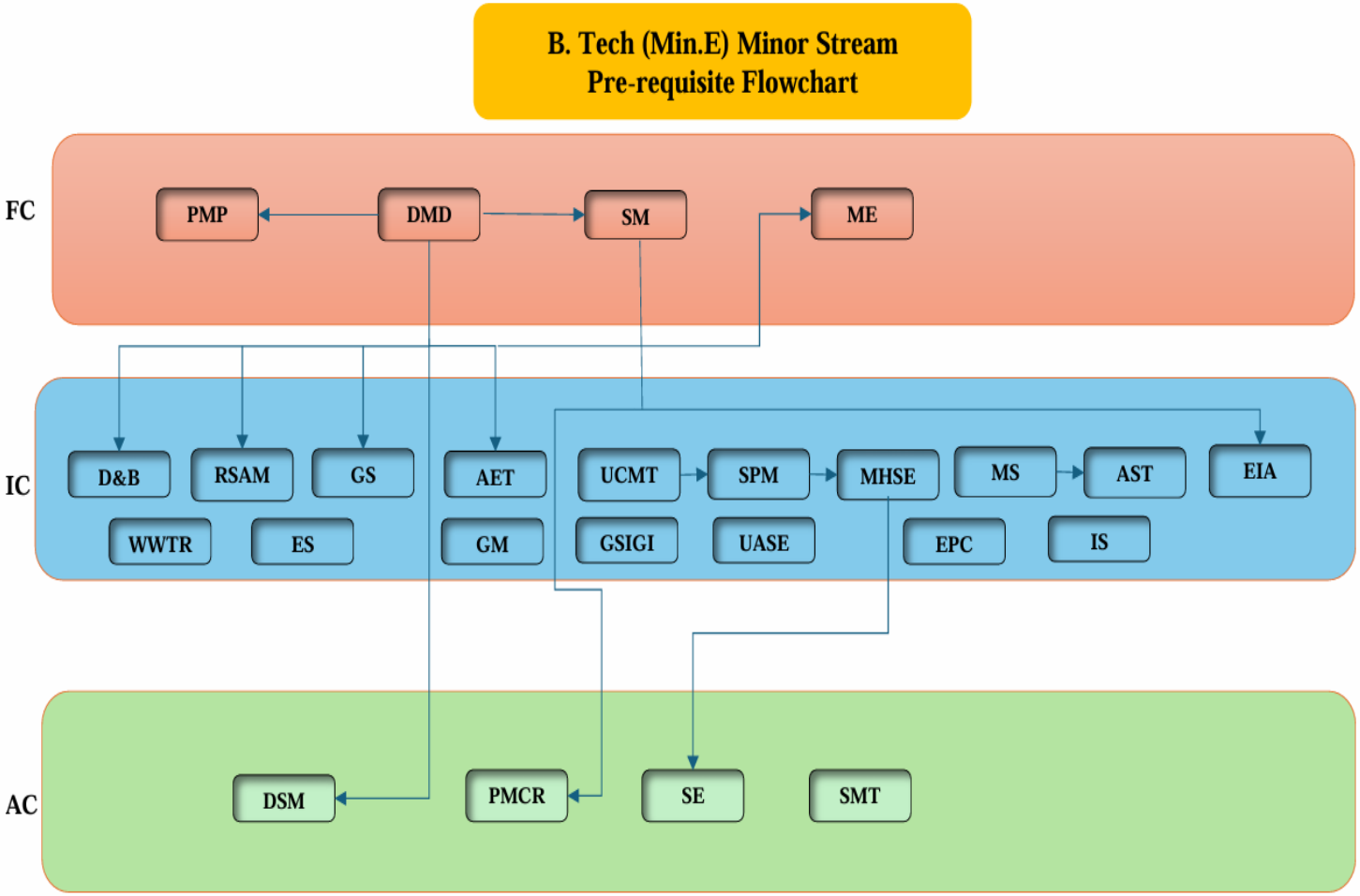
2501ME36	Sustainable Energy Systems	FC	3			3	50	50	100	CE, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501ME37	Solar Energy Systems	FC	3			3	50	50	100	CE, EEE, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501ME60	Composite Materials	IC	3			3	50	50	100	CE, EEE, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	SSP/MP
2501EC82	Communication Systems	FC	3			3	50	50	100	CE, EEE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501EC83	Electronic Measurements & Instrumentation	FC	3			3	50	50	100	CE, EEE, CSE, IT, AIML, CSE(DS) PT, Min. E	BEEE
2501EC84	Introduction to Embedded Systems	FC	3			3	50	50	100	CE, EEE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501EC85	Fundamentals of Image Processing	FC	3			3	50	50	100	CE, EEE, CSE, IT, AIML, CSE(DS) PT, Min. E	
2501EC77	Sensors and Transducers	IC	3			3	50	50	100	CE, EEE, CSE, IT, AIML, CSE(DS) PT, Min. E	
2501CS03	Data Structures	FC	2		2	4	50	50	100	CE, EEE, ME, ECE, PT, Min. E	PPSC
2501CS65	Computer Organization	FC	2		1	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501CS13	Operating Systems	IC	2		1	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501IT05	Database Management Systems	IC	2		2	4	50	50	100	CE, EEE, ME, ECE, PT, Min. E	PPSC
2501IT07	Agile Software Engineering	IC	2		1	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	PPSC
2501CS07	Computer Networks	IC	2		1	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501IT06	Java Programming	IC	2		2	4	50	50	100	CE, EEE, ME, ECE, PT, Min. E	PPSC
2501CS68	Fundamentals of RedHat Enterprise Linux	FC			2	2	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501CS67	AWS Cloud Foundations	IC			3	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501CS66	AWS Cloud Development	AC			3	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501CS70	Continuous integration & delivery using DevOps	AC			3	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-

2501IT24	Fundamentals of Salesforce Administration	FC			2	2	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501IT34	Advanced Salesforce Administration	AC			3	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501IT23	Principles of Pega Systems	IC			3	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501IT26	Pega System Architecture & Design	AC			3	3	50	50	100	CE, EEE, ME, ECE, PT, Min. E	-
2501MB04	Entrepreneurship Development & Incubation	IC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501MB05	Business Ethics & Corporate Governance	AC	3			3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501MB06	Entrepreneurship Development & Business Management	AC	1		2	3	50	50	100	CE, EEE, ME, ECE, CSE, IT, AIML, CSE(DS) PT, Min. E	-
2501EC29	SoC Design	AC	3			3	50	50	100	CE, EEE, ME, CSE, IT, AIML, CSE (DS), PT, Min.E.	MPMC
2501CS23	Cloud Computing	FC	2		2	4	50	50	100	CE, EEE, ME, ECE, PT, Min.E.	-

B. Tech (Min.E) Program Curriculum
Pre-requisite Flow Chart



FC- Foundation Courses		IC- Intermediate-level Courses		AC- Advanced Courses	
ECESE-	Essential Cognitive English Skills for Engineers	**NMIT-**	Numerical methods & Integral Transforms	**MP-**	Mine Planning
ACESE-	Advanced Cognitive English Skills for Engineers	**MPT-**	Mineral Processing Technology	**SAME-**	Software Applications in Mining Engineering
EM-	Engineering Mechanics	**EE-**	Engineering Economics	**ML&GS-**	Mine Legislation & General Safety
IME-	Introduction to Mechanical Engineering	**MH&R-**	Mine Hazards & Rescue	**TPP-**	Technical Paper Publication
BIL-	Business Intelligence Lab	**DAP-**	Data Analysis using Python	**ME&VE-**	Mine Environment & Ventilation Engineering
PPSC-	Programming for Problem Solving Using C	**MS-**	Mine Surveying	**MM-**	Mine Machinery
SSP-	Solid State Physics	**CVSM-**	Complex Variables & Statistical Methods	**MSE-**	Mine System Engineering
IMG-	Introduction to Mining Geology	**MWPC**	Mine Water Pollution & Control	**MAVR-**	Mine Automation & Virtual Reality
LA&C-	Linear Algebra & Calculus	**SM-**	Surface Mining	**SI-II-**	Summer Internship-II
FRM-	Fundamental of Rock Mechanics	**UMMT-**	Underground Metal Mining Technology	**MSC-**	Minor Stream Courses
IOT-	Internet of Things	**UCMT-**	Underground Coal Mining Technology	**UEC-**	University Elective Courses
EC-	Engineering Chemistry	**SI-I-**	Summer Internship-I	**FSI-**	Full Semester Internship
DMD-	Development of Mineral Deposits	**MA-**	Mine Automation	**SABL-**	Student Activity Based Learning
EW-	Engineering Workshop				
DTAI-	Design Thinking using AI				
DE&VC-	Differential Equations & Vector Calculus				
EG-	Engineering Graphics				
BEEE-	Basic Electrical & Electronics Engineering				
UHV-	Universal Human Values				


B. Tech (Min.E) Minor Stream
Pre-requisite Flowchart
FC
PMP
DMD
SM
ME
IC
D&B
RSAM
GS
AET
UCMT
SPM
MHSE
MS
AST
EIA
WWTR
ES
GM
GSIGI
UASE
EPC
IS
AC
DSM
PMCR
SE
SMT

FC- Foundation Courses		IC- Intermediate-level Courses		AC- Advanced Courses	
PMP-	Planning for Mining Projects	**D&B-**	Drilling & Blasting	**DSM-**	Deep Sea Mining
DMD-	Development of Mineral Deposits	**RSAM-**	Remote Sensing Applications in Mining	**PMCR-**	Planning for Mine Closure & Reclamation
SM-	Sustainable Mining	**GS-**	Geo-Statistics	**SE-**	Safety Engineering
ME-	Mineral Economics	**AET-**	Advanced Exploration Techniques	**SMT-**	Space Mining Technology
		UCMT-	Underground Coal Mining Technology		
		SPM-	Safety Practices in Mines		
		MHSE-	Mine Health & Safety Engineering		
		MS-	Mine Surveying		
		AST-	Advanced Surveying Technology		
		EIA-	Environmental Impact Assessment		
		WWTR-	Waste Water Treatment & Recycling		
		ES-	Environment & Safety		
		GM-	Green Mining		
		GSIGI-	Geo Spatial Imaging & Geo- informatics		
		UASE-	Utilisation of Alternative Sources of Energy		
		EPC-	Environmental Pollution & Control		
		IS-	Industrial Safety		

Suggestive Semester-wise Curriculum

I SEMESTER

Course Code	Course Title	Course		Credits				Total Hours
		Category	Level	L	T	P	Total	
2501MA01	Linear Algebra & Calculus	MCC	FC	2	1		3	3
2501PH01	Solid State Physics	MCC	FC	2		1	3	4
2501ME01	Engineering Graphics	MCC	FC	1		2	3	6
2501ME03	Engineering Workshop	MCC	FC			1	1	2
2501MN02	Introduction to Mining Geology	MCC	FC	2		2	4	6
2501IT01	Business Intelligence Lab	MDC	FC			2	2	4
2501EN01	Essential Cognitive Skills For Engineers	AEC	FC			1	1	2
2501UC07	Design Thinking using AI	AEC	FC			1	1	2
Total				**7**	**1**	**10**	**18**	**29**

II SEMESTER

Course Code	Course Title	Course		Credits				Total Hours
		Category	Level	L	T	P	Total	
2501MA02	Differential Equations & Vector Calculus	MCC	FC	2	1		3	3
2501CH01	Engineering Chemistry	MCC	FC	2		1	3	4
2501ME02	Engineering Mechanics	MCC	FC	2	1	1	4	5
2501EN02	Advanced Cognitive Skills for Engineers	AEC	FC			1	1	2
2501CS01	Programming for Problem Solving using C	MDC	FC	2		2	4	6
2501EE01	Basic Electrical & Electronics Engineering	MDC	FC	2		2	4	6
2501UC08	Universal Human Values	AEC	FC	2			2	2
2501MN16	Mine Automation	SEC	IC			1	1	1
2501UC11	Employability Skills – I	VAC	FC			3	0	3
2501AC01	Environmental Science	MC	FC				0	2
Total				**12**	**2**	**11**	**22**	**34**

III SEMESTER

Course Code	Course Title	Course		Credits				Total Hours
		Category	Level	L	T	P	Total	
2501MA06	Complex Variables & Statistical Methods	MCC	IC	2	1		3	3
2501MN01	Introduction to Mechanical Engineering	MCC	FC	2		1	3	4
2501MB02	Engineering Economics	MCC	IC	3			3	3
2501MN03	Development of Mineral Deposits	MCC	FC	3			3	3
2501MN05	Mine Surveying	MCC	IC	2	1	2	5	7
2501CS02	Data Analysis using Python	VAC	IC			2	2	4
2501UC13	Employability Skills – II	VAC	FC			3	0	3
2501AC02	Constitution of India	MC	FC				0	2
Total				**12**	**2**	**8**	**19**	**29**

IV SEMESTER

Course Code	Course Title	Course		Credits				Total Hours
		Category	Level	L	T	P	Total	
2501MA05	Numerical Methods & Integral Transforms	MCC	IC	2	1		3	3
2501MN04	Fundamental of Rock Mechanics	MCC	FC	2	1	2	5	7
2501MN06	Surface Mining	MCC	IC	3			3	3
2501MN07	Underground Coal Mining Technology	MCC	IC	3			3	3
	Minor Stream Course-1/ University Open Elective Course-1	MSC/UEC	FC	3			3	3
	Minor Stream Course-2/ University Open Elective Course-2	MSC/UEC	IC/AC	3			3	3
2501MN17	Mine Planning	SEC	AC			2	2	4
2501CS04	Internet of Things	VAC	FC			1	1	2
2501UC14	Employability Skills – III	VAC	IC			3	0	3
2501AC03	Research Methodology	MC	FC				0	2
Total				**16**	**2**	**8**	**23**	**35**

V SEMESTER

Course Code	Course Title	Course		Credits				Total Hours
		Category	Level	L	T	P	Total	
2501MN08	Underground Metal Mining Technology	MCC	IC	2	1		3	3
2501MN11	Mine Environment & Ventilation Engineering	MCC	AC	1	1	2	4	6
	Minor Stream Course-3/ University Open Elective Course-3	MSC/UEC	IC/AC	3			3	3
	Minor Stream Course-4/ University Open Elective Course-4	MSC/UEC	IC/AC	3			3	3
	Minor Stream Course-5/ University Open Elective Course-5	MSC/UEC	IC/AC	3			3	3
2501MN18	Mine Automation & Virtual Reality	SEC	AC			2	2	4
2501UC15	Employability Skills – IV	VAC	IC			3	0	3
2501MN20	Summer Internship-I	SI	IC			2	2	4
2501AC04	Intellectual Property Rights & Patents	MC	FC				0	2
Total				**12**	**2**	**9**	**20**	**31**

VI SEMESTER

Course Code	Course Title	Course		Credits				Total Hours
		Category	Level	L	T	P	Total	
2501MN09	Mineral Processing Technology	MCC	IC	2		2	4	6
2501MN12	Mine Machinery	MCC	AC	2	1	1	4	5
2501MN13	Mine System Engineering	MCC	AC	2	1		3	3
	Minor Stream Course-6/ University Open Elective Course-6	MSC/UEC	IC/AC	3			3	3
	Minor Stream Course-7/ University Open Elective Course-7	MSC/UEC	IC/AC	3			3	3
	Minor Stream Course-8/ University Open Elective Course-8	MSC/UEC	IC/AC	3			3	3
2501MN15	Mine Water Pollution & Control	SEC	IC			2	2	4
2501AC05	Indian Knowledge Systems	MC	FC				0	2
Total				**15**	**2**	**5**	**22**	**29**

VII SEMESTER

Course Code	Course Title	Course		Credits				Total Hours
		Category	Level	L	T	P	Total	
2501MN10	Mine Hazards & Rescue	MCC	IC	2	1	1	4	5
2501MN14	Mine Legislation & General Safety	MCC	AC	2	1		3	3
	Minor Stream Course-9/ University Open Elective Course-9	MSC/UEC	IC/AC	3			3	3
	Minor Stream Course-10/ University Open Elective Course-10	MSC/UEC	IC/AC	3			3	3
	Minor Stream Course-11/ University Open Elective Course-11	MSC/UEC	IC/AC	2			2	2
2501MN19	Software Applications in Mining Engineering	SEC	AC			2	2	4
2501MN21	Summer Internship - II	SI	AC			2	2	4
Total				**12**	**2**	**5**	**19**	**24**

VIII SEMESTER

Course Code	Course Title	Course		Credits				Total Hours
		Category	Level	L	T	P	Total	
2501UC09	Technical Paper Publication	AEC	AC			2	2	4
2501UC16	Employability Skills – V	VAC	AC			3	1	3
2501MN47	Student Activity Based Learning	AEC	AC			2	2	4
2501MN22	Full Semester Internship	PROJ	AC			12	12	24
Total						**19**	**17**	**35**

Total Credit: 160.

Minor Degree in Mining Engineering (offered to other branches students)

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501MN03	Development of Mineral Deposits	FC	3			3	50	50	100	-
2501MN41	Green Mining	FC	3			3	50	50	100	-
2501MN06	Surface Mining	IC	3			3	50	50	100	DMD
2501MN24	Drilling & Blasting	IC	3			3	50	50	100	DMD
2501MN07 2501MN08	Underground Coal Mining Technology (or) Underground Metal Mining Technology	IC	3			3	50	50	100	DMD
2501MN14 2501MN28	Mine Legislation & General Safety (or) Environmental Pollution & Control	AC	3			3	50	50	100	UCMT / UMMT
2501MN45 2501MN46	Industrial Safety Practices (or) Ground Control	AC	2			2	50	50	100	-
Total			**20**			**20**				

Minor Degree in Civil Engineering

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501CE25	Repair & Rehabilitation of Structures	FC	3			3	50	50	100	-
2501CE43	Building Planning & Computer-Aided Drawing	FC			2	2	50	50	100	-
2501CE27	Green Buildings	FC	3			3	50	50	100	-
2501CE40	Fundamentals of Soil Behaviour	FC	2	1		3	50	50	100	-
2501CE54 2501CE47	Railway Engineering(or) Docks & Harbour Engineering	FC	3			3	50	50	100	-
2501CE36 2501CE37	Environmental Impact & Risk Management(or) Environmental Management	IC	3			3	50	50	100	-
2501CE56 2501CE49	Urban Transportation Planning(or) Intelligent Transportation Systems	IC	3			3	50	50	100	-
Total			**17**	**1**	**2**	**20**				

Minor Degree in Electrical and Electronics Engineering

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501EE55	Operation &Control of Electric machines	FC	2			2	50	50	100	BEEE
2501EE56	Fundamentals of Power Electronics	FC	2			2	50	50	100	BEEE
2501EE13	Electrical Measurements & Instrumentation	FC	2	1	1	4	50	50	100	ENA-1/BEEE
2501EE53	Electric Power Generation, Transmission and Distribution Systems	IC	3			3	50	50	100	ENA-1/BEEE
2501EE34 2501EE27	Alternative Energy Sources (or) Utilization of Electrical Energy	IC	3			3	50	50	100	EPGDS / BEEE/ ISM
2501EE37 2501EE35	Hybrid Electric Vehicles (or) Special Electric machines	AC	3			3	50	50	100	FPE/ OCEM
2501EE43 2501EE30	Electrical Safety (or) Methods &Algorithms for Intelligent Control	AC	3			3	50	50	100	EPGDS/PSA
	Total		**18**	**1**	**1**	**20**				

Minor Degree in Mechanical Engineering

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501ME74	Basic Mechanical Engineering	FC	2			2	50	50	100	-
2501ME04	Engineering Thermodynamics	IC	2	1		3	50	50	100	SSP/ MP
2501ME77	Introduction to Automobile Engineering (or)	IC	3			3	50	50	100	SSP/ MP
2501ME78	Mechanics of Solids									
2501ME12	Heat Power Engineering (or)	IC	2	1		3	50	50	100	ETD
2501ME40	Refrigeration & Air Conditioning									
2501ME75	Production Technology	IC	3			3	50	50	100	EW
2501ME76	Metallurgy & Material Science	IC	3			3	50	50	100	SSP/ MP
2501ME79	Theory of Machines (or)	AC	3			3	50	50	100	SSP/ MP
2501ME80	Advanced Engineering Metrology									
	Total		**18**	**2**		**20**				

Minor Degree in Electronics and Communication Engineering

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-Requisite
2501EC87	Fundamentals of Communications	FC	2		1	3	50	50	100	-
2501EC88	Fundamentals of Signal Processing	FC	2		1	3	50	50	100	-
2501EC89	Analog & Digital Circuits	IC	2			2	50	50	100	BEEE
2501EC42	Wireless LAN's & PAN's	IC	2	1		3	50	50	100	-
2501EC90 / 2501EC91	Linear & Digital IC Applications (or) Sensors & Actuators	IC	3			3	50	50	100	ADC
2501EC92 / 2501EC93	Embedded Microcontrollers (or) Digital System Design	IC	2		1	3	50	50	100	ADC, PPSC
2501EC67	Introduction to Internet of things (or) Modern Wireless Communications	AC	2		1	3	50	50	100	EM, WLAN's& PAN's
2501EC74			3			3	50	50	100	FC
Total			**15**	**1**	**4**	**20**				

Minor Degree in Computer Science and Engineering

Course Code	Course Title	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501CS13	Operating Systems	IC	2		1	3	50	50	100	-
2501CS07	Computer Networks	IC	2		1	3	50	50	100	-
2501IT07	Agile Software Engineering	IC	2		1	3	50	50	100	PPSC
2501AI03	Data Mining	IC	1		2	3	50	50	100	-
2501CS08 / 2501IT06	Object Oriented Programming through C++ (or) Java Programming	IC	2		2	4	50	50	100	PPSC
2501CS16	Introduction to MERN Stack Development(or) Information Security Analysis & Audit	IC			2	2	50	50	100	JP
2501CS30		IC	2			2	50	50	100	-
2501CS18	Advanced MERN Stack Development(or) Flutter Fundamentals	AC			2	2	50	50	100	IMSD
2501IT12		AC			2	2	50	50	100	-
Total			**11**		**9**	**20**				

Minor Degree in Data Science

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501IT07	Agile Software Engineering	IC	2		1	3	50	50	100	PPSC
2501CS34	Fundamentals of Data Science	IC	2		1	3	50	50	100	PPSC
2501CS12	NoSQL Databases	IC	2			2	50	50	100	-
2501AI03	Data Mining	IC	1		2	3	50	50	100	-
2501CS37 2501CS36	Health Care Data Analytics (or) Business Intelligence & Analytics	IC	2		1	3	50	50	100	PPSC
2501AI04 2501AI19	Big Data Analytics (or) Data Visualization	AC	2		1	3	50	50	100	DM DAP
2501CS41 2501CS40	Social Network Analysis (or) Social Networks & Semantic Web	AC	2		1	3	50	50	100	-
	Total		**13**		**7**	**20**				

Minor Degree in Artificial Intelligence and Machine Learning

Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501AI02	Artificial Intelligence	IC	2		1	3	50	50	100	DAP
2501AI05	Machine Learning	IC	2		2	4	50	50	100	DAP
2501AI15	AI Chatbots	IC	2			2	50	50	100	DAP
2501AI14	Soft Computing (or) Fundamentals of Data Science	IC	1		2	3	50	50	100	AI
2501CS34			2		1	3	50	50	100	PPSC
2501AI10 2501AI19	Natural Language Processing (or) Data Visualization	AC	2		1	3	50	50	100	DAP
2501AI16 2501CS41	Prompt Engineering and GenAI (or) Social Network Analysis	AC	2		1	3	50	50	100	ML
2501AI17	Federated Machine Learning	AC	2			2	50	50	100	ML
Total			**14**		**6**	**20**				

Minor Degree in Petroleum Technology

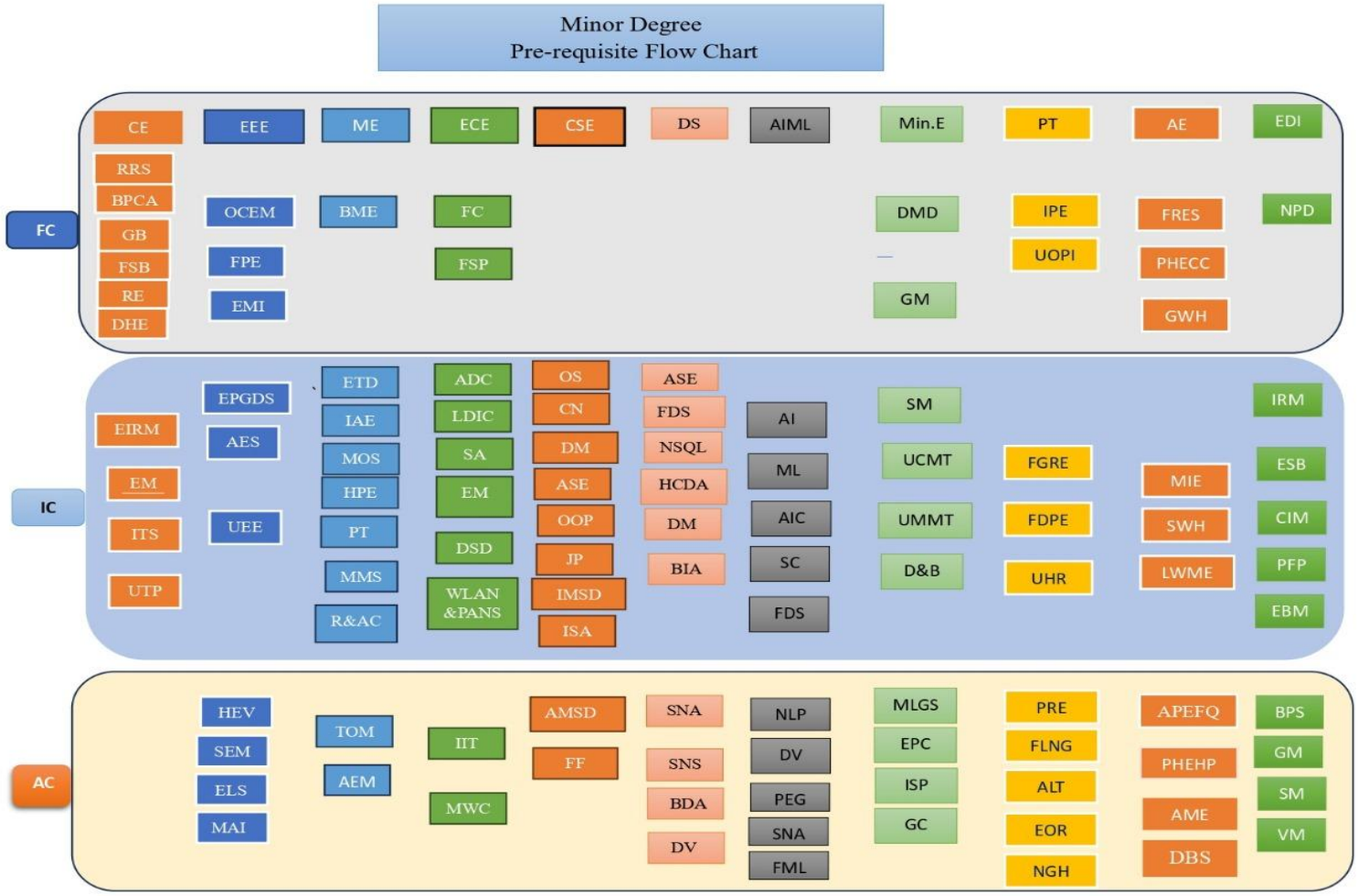
Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	Pre-requisite
2501PT27	Introduction to Petroleum Engineering	FC	3			3	50	50	100	-
2501PT35	Unit Operations in Petroleum Industry	FC	3			3	50	50	100	-
2501PT47	Fundamentals of Geology & Reservoir Engineering	IC	3			3	50	50	100	-
2501PT48	Fundamentals of Drilling & Production Engineering (or) Unconventional Hydrocarbon Resources	IC	3			3	50	50	100	-
2501PT16			1	1		2				
2501PT49	Natural Gas Hydrates (or) Fundamentals of Liquefied Natural Gas	AC	2			2	50	50	100	-
2501PT05			3			3				
2501PT50	Artificial Lift Techniques (or) Enhanced Oil Recovery	AC	3			3	50	50	100	-
2501PT03			2	1		3				
2501PT12	Petroleum Refinery Engineering	AC	3			3	50	50	100	-
Total			**18**	**2**		**20**				

Minor Degree in Agricultural Engineering

Agricultural Engineering							Marks			Pre-requisite
Course Code	**Course Name**	**Level**	**L**	**T**	**P**	**C**	**CIE**	**SEE**	**Total**	
2501AE82	Fundamentals of Renewable Energy Sources	FC	3			3	50	50	100	-
2501AE83	Post-harvest Engineering of Cereal Crops	FC	3			3	50	50	100	-
2501AE84	Ground Water Hydrology	FC	3			3	50	50	100	-
2501AE85	Micro Irrigation Systems	IC	2			2	50	50	100	-
2501AE86 2501AE87	Surface Water Hydrology (OR) Land & Water Management Engineering	IC	3			3	50	50	100	GWH
2501AE88 2501AE89	Agricultural Process Engineering & Food Quality (OR) Post-harvest Engineering for Horticultural Produce	AC	3			3	50	50	100	PHECC
2501AE90 2501AE91	Agricultural & Machinery Equipment (or) Design of Bio-energy systems	AC	3	0	0	3	50	50	100	FRES
	Total		**20**			**20**				

Minor Degree in Quantum Technologies

S.No.	Course Code	Course Name	L	T	P	C	Semester
Mandatory Courses							
1	251EC097	Survey of Quantum technologies and Application	3	0	0	3	IV
2	251EC098	Foundations of Quantum Technologies	3	0	0	3	V
3	251EC099	Basic Programming Lab (or)	1	0	2	3	V
	251EC100	Basic Laboratory Course for Quantum Technologies					
4	251EC101	Quantum Algorithms and Cryptography	12 week 3 Credit - NPTEL MOOC			3	VII/VIII
Any One course from the below							
5	251EC102	Introduction to Quantum Computation	3	0	0	3	VI
6	251EC103	Introduction to Quantum Communication	3	0	0	3	VI
7	251EC104	Introduction to Quantum Sensing	3	0	0	3	VI
8	251EC105	Introduction to Quantum Materials	3	0	0	3	VI
Any One course from the below							
9	251EC106	Engineering Foundations of Quantum Technologies	3	0	0	3	VII
10	251EC107	Solid State Physics for Quantum Technologies	3	0	0	3	VII
11	251EC108	Quantum Optics	3	0	0	3	VII
12	251EC109	Quantum Cybersecurity	3	0	0	3	VII
13	251EC110	Quantum Machine Learning	3	0	0	3	VII
Total			**18**	**0**	**0**	**18**	


Minor Degree
Pre-requisite Flow Chart
FC
CE
RRS
BPCA
GB
FSB
RE
DHE
EEE
OCEM
FPE
EMI
ME
BME
ECE
FC
FSP
CSE
DS
AIML
Min.E
DMD
GM
PT
IPE
UOPI
AE
FRES
PHECC
GWH
EDI
NPD
IC
EIRM
EM
ITS
UTP
EPGDS
AES
UEE
ETD
IAE
MOS
HPE
PT
MMS
R&AC
ADC
LDIC
SA
EM
DSD
WLAN &PANS
OS
CN
DM
ASE
OOP
JP
IMSD
ISA
ASE
FDS
NSQL
HCDA
DM
BIA
AI
ML
AIC
SC
FDS
SM
UCMT
UMMT
D&B
FGRE
FDPE
UHR
MIE
SWH
LWME
IRM
ESB
CIM
PFP
EBM
AC
HEV
SEM
ELS
MAI
TOM
AEM
IIT
MWC
AMSD
FF
SNA
SNS
BDA
DV
NLP
DV
PEG
SNA
FML
MLGS
EPC
ISP
GC
PRE
FLNG
ALT
EOR
NGH
APEFQ
PHEHP
AME
DBS
BPS
GM
SM
VM

Dept.	Foundation Courses		Intermediate- Level Courses		Advanced Courses	
CE	RRS	Repair &Rehabilitation of Structures	EIRM	Environmental Impact & Risk Management		
	BPCA	Building Planning & Computer-Aided Drawing	EM	Environmental Management		
	GB	Green Building	UTP	Urban Transportation Planning		
	FSB	Fundamental of Soil Behaviour	ITS	Intelligent Transportation Systems		
	RE	Railway Engineering				
	DHE	Docks &Harbour Engineering				
EEE	OCEM	Operation control of Electric Machines	AES	Alternative Energy Sources	MAI	Methods & Algorithms for Intelligent Control
	FPE	Fundamentals of Power Electronics	EPGDS	Electric Power Generation &Distribution Systems	HEV	Hybrid Electric Vehicles
	EMI	Electrical Measurements & Instrumentation	UEE	Utilization of Electrical Energy	SEM	Special Electric Machines
					ELS	Electrical Safety
ME	BME	Basic Mechanical Engineering	ETD	Engineering Thermodynamics	TOM	Theory of Machines
			IAE	Introduction to Automobile Engineering	AEM	Advanced Engineering Metrology
			MOS	Mechanics of Solids		
			HPE	Heat Power Engineering		
			PT	Production Technology		
			MMS	Metallurgy & Material Science		
			R&AC	Refrigeration &Air Conditioning		
ECE	FC	Fundamentals of Communications	ADC	Analog & Digital Circuits	IIT	Introduction to Internet of things
			LDIC	Linear & Digital IC Applications		
	FSP	Fundamentals of Signal Processing	SA	Sensors & Actuators		
			EM	Embedded Microcontrollers	MWC	Modern Wireless Communications
			DSD	Digital System Design		
			WLAN &PAN	Wireless LANS & PANS		
CSE			SE	Software Engineering		
			OOP	Object Oriented Programming through C++	AMSD	Advanced MERN Stack Development
			OS	Operating Systems	FF	Flutter Fundamentals
			CN	Computer Networks		
			JP	Java Programming		
			IMSD	Introduction to MERN Stack Development		
			ISA	Information Security Analysis and Audit		
			DM	Data Mining		
DS			DM	Data Mining	SNA	Social Network Analysis
			FDS	Fundamentals of Data Science	DV	Data Visualization
			SE	Software Engineering	BDA	Big Data Analytics
			NSQL	NoSQL Databases	SNSW	Social Networks and Semantic Web
			BIA	Business Intelligence & Analytics		
			HCDA	Health Care Data Analysis		

AIML			ML	Machine Learning	DV	Data Visualization
			AI	Artificial Intelligence	PEG	Prompt Engineering and GenAI
			AI C	AI Chatbot	SNA	Social Network Analysis
			FDS	Fundamentals of Data Science	FML	Federated Machine Learning
			SC	Soft Computing	NLP	Natural Language Processing
Min.E	DMD	Development of Mineral Deposits	SM	Surface Mining	MLGS	Mine Legislation and General Safety
	GM	Green Mining	UCMT	Underground Coal Mining Technology	EPC	Environmental Pollution & Control
			UMMT	Underground Metal Mining Technology	ISP	Industrial Safety Practices
			DB	Drilling & Blasting	GC	Ground Control
PT	IPE	Introduction to Petroleum Engineering	FGRE	Fundamentals of Geology and Reservoir Engineering	PRE	Petroleum Refinery Engineering
	UOPI	Unit operations in Petroleum Industry	FDPE	Fundamentals of Drilling and Production Engineering	FLNG	Fundamentals of Liquefied Natural Gas
					NGH	Natural Gas Hydrates
			UHR	Unconventional Hydrocarbon Resources	ALT	Artificial Lift Techniques
					EOR	Enhanced Oil Recovery
Ag.E	GWH	Ground Water Hydrology	LWME	Land and Water Management	DBS	Design of Bio-Energy Systems
	PHEC C	Post-harvest Engineering of Cereal Crops	SWH	Surface Water Hydrology	PHEHP	Post-Harvest Engineering for Horticultural Produce
			MIE	Micro Irrigation Systems		
	FRES	Fundamentals of Renewable Energy Sources			AME	Agricultural Machinery and Equipment
					APEFQ	Agriculture Process Engineering and Food Quality
EDC	NPD	New Product Development	ESB	Entrepreneurship and Small Business Management	BPS	Business Policy & Strategic Management
			CIM	Change & Innovations Management	GM	Green Marketing
			PFP	Personal Financial Planning	SM	Startup Management
			EBM	E-Business Management	VM	Venture Management
			IRM	Insurance and Risk Management		