

PROGRAM CURRICULUM

AGRICULTURAL ENGINEERING

for

B. TECH. FOUR YEAR DEGREE PROGRAM

(Applicable for the batches admitted from A.Y 2024-25)



ADITYA UNIVERSITY

Aditya Nagar, ADB Road, Surampalem - 533 437



Department of Agricultural Engineering

Vision:

To be a globally recognized leader in agricultural engineering by advancing excellence in education, pioneering innovation, and developing sustainable technologies for the future of agriculture.”

Mission:

M1: Provide transformative education with industry-ready and interdisciplinary skills.

M2: Advance innovative research through collaboration, experimentation, and practical applications in agriculture.

M3: Promote inclusive, eco-friendly, and sustainable solutions for global agricultural needs.

Program Educational Objectives (PEOs)

PEO 1: Design and develop sustainable and eco-friendly agricultural solutions that benefit society and the environment.

PEO 2: Pursue successful careers in industry, research, or higher studies with interdisciplinary skills and global competencies.

PEO 3: Engage in lifelong learning and adapt to emerging technologies to address evolving challenges in agriculture.

Program Specific Outcomes (PSOs)

PSO 1: Develop farm machinery and green technologies.

PSO 2: Apply post-harvest, dairy and food engineering technologies.

PSO 3: Apply irrigation and drainage engineering and soil and water conservation techniques.

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 Agricultural Engineering

B.Tech (Ag.E) Program Curriculum (w.e.f A.Y 2024-2025)

UG Programs Offered

- B. Tech in (Agricultural Engineering)

Minimum Credit Requirements to Award B. Tech Degree under Each Category:

S.No	Broad Category of Course	Credit Division	
		ICAR	2024-Agri
1	Major/Minor Core Courses (MCC)	116+9 [#]	116+9 [#]
2	Multidisciplinary Courses (MDC)	10	10
3	Ability Enhancement Courses (AEC)	10	10
4	Skill Enhancement Courses (SEC)	08	08
5	Value Added Courses (VAC)	06	06
6	Research Project / Dissertation (PROJ)	15	7
7	Summer Internship (SI)	0	8
8	Audit Courses (AUC)	0	0
Total		174+10 (NGC)	174

Note:

1. Students must get minimum of 174 credits + Audit courses
2. # Electives

COURSE STRUCTURE
Semester wise course distribution

Course Code	Course Title	Course		L	T	P	C	Hours
		Category	Level					
First Year								
I Semester								
241AE001	Deeksharambh	AUC	FC	0	0	2	0	4
241AE002	Crop Production and Protection Technologies	MDC	FC	3	0	1	4	5
241AE003	Introduction to Agricultural Engineering	MCC	FC	3	0	1	4	5
241AE004	Surveying and Levelling	MCC	FC	1	0	2	3	5
241EN001	Essential Cognitive Skills for Engineers	AEC	FC	0	0	1	1	2
241AE005	Basic Electrical Gadgets and Instruments	MCC	FC	2	0	1	3	4
241AE006	Agricultural Informatics	VAC	FC	2	0	1	3	4
241PE002	NSS/NCC-I	AEC	FC	0	0	1	1	2
Total				11	0	8	19	31
II Semester								
241AE007	Skill Enhancement	SEC	FC	0	0	8	8	16
241AE008	Engineering Drawing	MCC	FC	0	0	2	2	4
241CS071	Computer Programming and Data Structures	AEC	IC	0	0	2	2	4
241AE009	Farming Based Livelihood Systems	MDC	FC	2	0	1	3	4
241AE010	Environmental Studies and Disaster Management	VAC	FC	2	0	1	3	4
241AE011	Workshop Technology and Practice	MCC	FC	0	0	2	2	4
241EN002	Advanced Cognitive Skills for Engineers	AEC	FC	0	0	1	1	2
241PE003	NSS/NCC-II	AEC	FC	0	0	1	1	2
241UC011	Employability Skills-I	AUC	FC	0	0	2	0	2
Total				4	0	20	22	42

Second Year										
III- Semester										
241MA010	Engineering Mathematics-I	MCC	FC	2	1	0	3	3		
241PH003	Engineering Physics	MCC	FC	2	0	1	3	4		
241CH003	Engineering Chemistry	MCC	FC	2	0	1	3	4		
241AE012	Engineering Mechanics	MCC	FC	2	0	1	3	4		
241AE013	Soil Mechanics	MCC	IC	1	0	1	2	3		
241AE014	Fluid Mechanics and Open Channel Hydraulics	MCC	FC	2	0	1	3	4		
241AE015	Engineering Properties of Agricultural Produce and Food Science	MCC	FC	2	0	1	3	4		
241AE016	Farm Machinery& Equipment-I	MCC	IC	2	0	1	3	4		
241PE004	Physical Education, First Aid and Yoga Practice	AEC	FC	0	0	2	2	4		
241UC013	Employability Skills-II	AUC	FC	0	0	3	0	3		
Total						16	0	12	25	37
IV Semester										
241MA011	Engineering Mathematics-II	MCC	IC	2	1	0	3	3		
241AE017	Theory of Structures	MCC	IC	1	0	1	2	3		
241AE018	Building Construction & Cost Estimation	MCC	IC	2	0	0	2	2		
241AE019	Watershed Hydrology	MCC	IC	2	0	1	3	4		
241AE020	Soil and Water Conservation Engineering	MCC	IC	2	0	1	3	4		
241AE021	Farm Machinery& Equipment II	MCC	IC	2	0	1	3	4		
241AE022	Renewable Energy Sources	MCC	FC	2	0	1	3	4		
241AE023	Post-harvest Engineering of Cereals, Pulses and Oilseeds	MCC	IC	2	0	1	3	4		
241AE024	Entrepreneurship Development and Business Management	MDC	IC	2	0	1	3	4		
241UC014	Employability Skills-III	AUC	FC	0	0	3	0	3		
Total						18	0	10	25	35

Third Year								
V- Semester								
241AE025	Strength of Materials	MCC	IC	1	0	1	2	3
241AE026	Theory of Machines	MCC	IC	2	0	0	2	2
241AE027	Thermodynamics and Heat Transfer	MCC	IC	3	0	0	3	3
241AE028	Tractor & Automotive Engines	MCC	FC	2	0	1	3	4
241AE029	Irrigation and Drainage Engineering	MCC	IC	3	0	1	4	5
241AE034	Food and Dairy Engineering	MCC	IC	3	0	1	4	5
241UC012	Personality Development	AEC	FC	1	0	1	2	3
241AE030	Seminar	MCC		0	0	1	1	2
241AE031	Summer Internship-I + Study tour	SI	IC	0	0	2	0	
241UC015	Employability Skills-IV	AUC	FC	0	0	3	0	3
Total				15	0	11	21	30
VI- Semester								
241AE032	Tractor Systems & Controls	MCC	IC	2	0	1	3	4
241AE033	Groundwater, Wells and Pumps	MCC	IC	2	0	1	3	4
241AE095	Sensors, AI and Robotics in Agriculture	MCC	AC	2	0	1	3	4
241AE035	Agricultural Structures & Environment Control	MCC	IC	2	0	1	3	4
241AE036	Bioenergy Systems: Design and Applications	MCC	AC	2	0	1	3	4
241AE037	Refrigeration and Air-conditioning	MCC	IC	2	0	1	3	4
241AE038	Post-harvest Engineering of Horticultural Crops	MCC	IC	1	0	1	2	3
241AE039	Case Study	MCC	AC	0	0	1	1	2
Total				13	0	8	21	29

Fourth Year										
VII- Semester										
241AE040	Project-I	PROJ	AC	0	0	3	3	6		
241AE041	Engineering Graphics and Design	MCC	AC	0	0	2	2	4		
241AE042	Food Quality and Safety	MCC	IC	2	0	1	3	4		
241AE043	Watershed Planning and Management	MCC	AC	2	0	1	3	4		
241AE044	Sprinkler & Micro Irrigation Systems	MCC	AC	1	0	1	2	3		
241AE045	Machine Design	MCC	AC	2	0	0	2	2		
241AE046	Electrical Machines	MCC	IC	2	0	1	3	4		
241AE047	Agricultural Statistics & Data Analysis	MCC	IC	1	0	1	2	3		
241AE049	In-plant Training/Research Internship	SI	AC	0	0	0	8			
Total						10	0	10	28	30
VIII – Semester										
241AE048	Project-II	PROJ	AC	0	0	4	4	8		
	Elective-I	MCC	AC	2	0	1	3	4		
	Elective-II	MCC	AC	2	0	1	3	4		
	Elective-III	MCC	AC	2	0	1	3	4		
241UC017	Employability Skills-V	AUC	FC	0	0	3	0	3		
241AC001	Student Activity - Based Learning	AUC	AC	0	0	2	0	0		
	*On-line courses (24 weeks or 80 hours)	AUC				6	0			
Total						6	0	16	13	23

Course Code	Major/Minor Core Courses (MCC)						Marks			Pre-requisite
							CIE	SIE	Total	
241AE003	Introduction to Agricultural Engineering	FC	3	0	1	4	50	50	100	-
241AE004	Surveying and Levelling	FC	1	0	2	3	50	50	100	-
241AE011	Workshop Technology and Practice	FC	0	0	2	2	50	50	100	-
241AE005	Basic Electrical Gadgets and Instruments	FC	2	0	1	3	50	50	100	-
241AE008	Engineering Drawing	FC	0	0	2	2	50	50	100	-
241MA010	Engineering Mathematics-I	FC	2	1	0	3	50	50	100	-
241PH003	Engineering Physics	FC	2	0	1	3	50	50	100	-
241CH003	Engineering Chemistry	FC	2	0	1	3	50	50	100	-
241AE012	Engineering Mechanics	FC	2	0	1	3	50	50	100	-
241AE013	Soil Mechanics	IC	1	0	1	2	50	50	100	-
241AE014	Fluid Mechanics and Open Channel Hydraulics	FC	2	0	1	3	50	50	100	-
241AE015	Engineering Properties of Agricultural Produce and Food Science	FC	2	0	1	3	50	50	100	-
241AE016	Farm Machinery & Equipment- I	IC	2	0	1	3	50	50	100	-
241MA011	Engineering Mathematics-II	IC	2	1	0	3	50	50	100	M-I
241AE017	Theory of Structures	IC	1	0	1	2	50	50	100	-
241AE018	Building Construction & Cost Estimation	IC	2	0	0	2	50	50	100	-
241AE019	Watershed Hydrology	IC	2	0	1	3	50	50	100	FMOCH
241AE020	Soil and Water Conservation Engineering	IC	2	0	1	3	50	50	100	FMOCH

241AE021	Farm Machinery & Equipment II	IC	2	0	1	3	50	50	100	FME I
241AE022	Renewable Energy Sources	FC	2	0	1	3	50	50	100	-
241AE023	Post-harvest Engineering of Cereals, Pulses and Oilseeds	IC	2	0	1	3	50	50	100	-
241AE025	Strength of Materials	IC	1	0	1	2	50	50	100	-
241AE026	Theory of Machines	IC	2	0	0	2	50	50	100	EM
241AE027	Thermodynamics and Heat Transfer	IC	3	0	0	3	50	50	100	-
241AE028	Tractor & Automotive Engines	FC	2	0	1	3	50	50	100	-
241AE029	Irrigation and Drainage Engineering	IC	3	0	1	4	50	50	100	-
241AE034	Food and Dairy Engineering	IC	3	0	1	4	50	50	100	-
241AE030	Seminar	AC	0	0	1	1	50	50	100	-
241AE032	Tractor Systems & Controls	IC	2	0	1	3	50	50	100	T&AE
241AE033	Groundwater, Wells and Pumps	IC	2	0	1	3	50	50	100	-
241AE095	Sensors, AI and Robotics in Agriculture	AC	2	0	1	3	50	50	100	-
241AE035	Agricultural Structures & Environment Control	IC	2	0	1	3	50	50	100	-
241AE036	Bioenergy Systems: Design and Applications	AC	2	0	1	3	50	50	100	RES
241AE037	Refrigeration and Air-conditioning	IC	2	0	1	3	50	50	100	-
241AE038	Post-harvest Engineering of Horticultural Crops	IC	1	0	1	2	50	50	100	-
241AE039	Case Study	AC	0	0	1	1	50	50	100	-
241AE041	Engineering Graphics and Design	AC	0	0	2	2	50	50	100	-
241AE042	Food Quality and Safety	IC	2	0	1	3	50	50	100	-

241AE043	Watershed Planning and Management	AC	2	0	1	3	50	50	100	WH
241AE044	Sprinkler & Micro Irrigation Systems	AC	1	0	1	2	50	50	100	-
241AE045	Machine Design	AC	2	0	0	2	50	50	100	TOM
241AE046	Electrical Machines	IC	2	0	1	3	50	50	100	BEGI
241AE047	Agricultural Statistics and Data Analysis	IC	1	0	1	2	50	50	100	-
	Elective- I	AC	2	0	1	3	50	50	100	-
	Elective- II	AC	2	0	1	3	50	50	100	-
	Elective- III	AC	2	0	1	3	50	50	100	-
	Total		81	0	44	125				

Course Code	Multi-Disciplinary Courses (MDC)						Marks			Pre-requisite
	Course Name	Level	L	T	P	C	CIE	SEE	Total	
241AE002	Crop Production and Protection Technologies	FC	3	0	1	4	50	50	100	-
241AE009	Farming Based Livelihood Systems	FC	2	0	1	3	50	50	100	-
241AE024	Entrepreneurship Development and Business Management	IC	2	0	1	3	50	50	100	-
	Total		7	0	3	10				

Course Code	Ability Enhancement Courses (AEC)						Marks			Pre-requisite
	Course Name	Level	L	T	P	C	CIE	SEE	Total	
241PE002	NSS/ NCC- I	FC	0	0	1	1	100	-	100	-
241CS071	Computer Programming and Data Structures	IC	0	0	2	2	50	50	100	-
241EN001	Essential Cognitive Skills for Engineers	FC	0	0	1	1	100	-	100	-
241EN002	Advanced Cognitive Skills for Engineers	FC	0	0	1	1	100	-	100	-
241PE003	NSS/ NCC- II	FC	0	0	1	1	100	-	100	-
241PE004	Physical Education, First Aid and Yoga Practice	FC	0	0	2	2	100	-	100	-
241UC012	Personality Development	FC	1	0	1	2	100	-	100	-
	Total		1	0	9	10				

Course Code	Skill Enhancement Courses (SEC)						Marks			Pre-requisite
	Course Name	Level	L	T	P	C	CIE	SEE	Total	
241AE007										
	1. Skill Enhancement (students can opt any two given modules)	FC	0	0	8	8	50	50	100	-
	a) Operation & maintenance of farm machinery.		0	0	4	4	50	50	100	-
	b) Repair and maintenance of tractors and power tillers.		0	0	4	4	50	50	100	-
	c) Management of agricultural machinery custom hiring and maintenance facilities.		0	0	4	4	50	50	100	-
	d) Valorization of agri-biomass and organic waste.		0	0	4	4	50	50	100	-
	e) Energy audit, energy conservation and energy efficiency.		0	0	4	4	50	50	100	-

f) Installation and maintenance of micro-irrigation systems.		0	0	4	4	50	50	100	-
g) Application of remote sensing and GIS for agricultural water management.		0	0	4	4	50	50	100	-
h) Installation and maintenance of roof top rainwater harvesting systems.		0	0	4	4	50	50	100	-
i) Agro processing methods, equipment operation and maintenance.		0	0	4	4	50	50	100	-
j) Food grain godown and warehouse management.		0	0	4	4	50	50	100	-
k) Post-harvest value chain management including logistics.		0	0	4	4	50	50	100	-
l) Operation and maintenance of drones used for agricultural applications		0	0	4	4	50	50	100	-
m) Machine vision, sensors and sensors architecture		0	0	4	4	50	50	100	-
n) Geophysical survey and investigations for groundwater exploration and installation of tube well/ bore well		0	0	4	4	50	50	100	-
o) Construction, management and maintenance of protected cultivation structures		0	0	4	4	50	50	100	-
p) Agro processing methods, equipment operation and maintenance		0	0	4	4	50	50	100	-
	Total	0	0	8	8				

Course Code	Value Added Courses (VAC)						Marks			Pre-requisite
	Course Name	Level	L	T	P	C	CIE	SEE	Total	
241AE006	Agricultural Informatics	FC	2	0	1	3	50	50	100	-
241AE010	Environmental Studies and Disaster Management	FC	2	0	1	3	50	50	100	-
	Total		4	0	2	6				

Course Code	Audit Courses (AUC)						Marks			Pre-requisite
	Course Name	Level	L	T	P	C	CIE	SEE	Total	
241AE001	Deeksharambh	FC	0	0	2	0	100	-	100	-
241UC011	Employability Skills-I	FC	0	0	2	0	100	-	100	-
241UC013	Employability Skills-II	FC	0	0	3	0	100	-	100	ES-I
241UC014	Employability Skills-III	FC	0	0	3	0	100	-	100	ES-II
241UC015	Employability Skills-IV	FC	0	0	3	0	100	-	100	ES-III
241UC017	Employability Skills-V	FC	0	0	3	0	100	-	100	ES-IV
241AC001	Student Activity Based Learning	AC	0	0	2	0				
	*On-line courses (24 weeks or 80 hours)	FC	0	0	6	0	100	-	100	-
	Total		0	0	22	0				

Course Code	Summer Internship (SI)						Marks			Pre-requisite
	Course Name	Level	L	T	P	C	CIE	SEE	Total	
241AE031	Summer Internship-1 (Study tour)	FC	0	0	0	0	100	-	100	-
241AE049	In-plant Training/ Research Internship	AC	0	0	8	8	100	-	100	-
	Total		0	0	8	8				

Course Code	Research Project / Dissertation (PROJ)						Marks			Pre-requisite
	Course Name	Level	L	T	P	C	CIE	SEE	Total	
241AE040	Project- I	AC	0	0	3	3	50	50	100	-
241AE048	Project –II	AC	0	0	4	4	50	50	100	-
	Total		0	0	7	7				

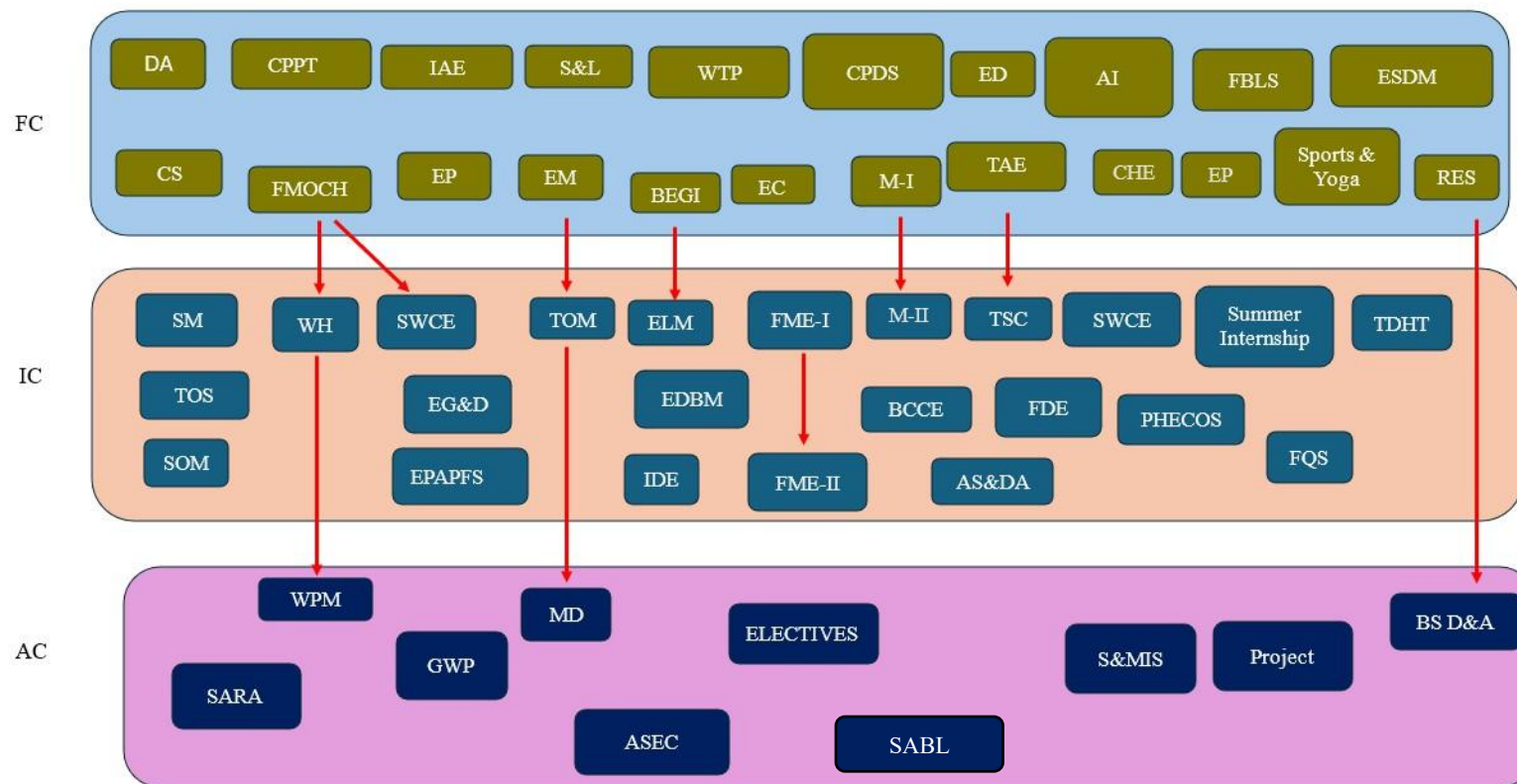
Course Code	Electives						Marks			Pre-requisite
	Title	Level	L	T	P	C	CIE	SEE	Total	
241AE050	Mechanics of Tillage and Traction	AC	2	0	1	3	50	50	100	-
241AE051	Farm Machinery Design and Production	AC	2	0	1	3	50	50	100	-
241AE052	Tractor Design and Testing	AC	2	0	1	3	50	50	100	-
241AE053	Hydraulic Drives and Controls	AC	2	0	1	3	50	50	100	-
241AE054	Human Engineering and Safety	AC	2	0	1	3	50	50	100	-
241AE055	Precision Agriculture and System Management	AC	2	0	1	3	50	50	100	-
241AE056	Photovoltaic Technology and Systems	AC	2	0	1	3	50	50	100	-
241AE057	Wind Power Technology and Systems	AC	2	0	1	3	50	50	100	-
241AE058	Waste and By-products Utilization	AC	2	0	1	3	50	50	100	-
241AE059	Floods and Control Measures	AC	2	0	1	3	50	50	100	-
241AE060	Remote Sensing and GIS Applications	AC	2	0	1	3	50	50	100	-
241AE061	Information Technology for Land and Water Management	AC	2	0	1	3	50	50	100	-
241AE062	Wasteland Development	AC	2	0	1	3	50	50	100	-

241AE063	Minor Irrigation and Command Area Development	AC	2	0	1	3	50	50	100	-
241AE064	Management of Canal Irrigation System	AC	2	0	1	3	50	50	100	-
241AE065	Water Quality and Management Measures	AC	2	0	1	3	50	50	100	-
241AE066	Landscape Irrigation Design and Management	AC	2	0	1	3	50	50	100	-
241AE067	Artificial Intelligence	AC	2	0	1	3	50	50	100	-
241AE068	Advances in Automation and Robotics in Agriculture	AC	2	0	1	3	50	50	100	-
241AE069	Environmental Engineering	AC	2	0	1	3	50	50	100	-
241AE070	Development of Processed Food Products	AC	2	0	1	3	50	50	100	-
241AE071	Food Packaging Technology	AC	2	0	1	3	50	50	100	-
241AE072	Food Plant and Equipment Design	AC	2	0	1	3	50	50	100	-
241AE073	Emerging Technologies in Food Processing	AC	3	0	0	3	50	50	100	-
241AE074	Processing of Livestock, Fish and Marine Products	AC	2	0	1	3	50	50	100	-
241AE075	Food Business Management and Entrepreneurship Development	AC	3	0	0	3	50	50	100	-
241AE076	Natural Fibres: Extraction & Properties	AC	2	0	1	3	50	50	100	-
241AE077	Natural Fibre Applications in Agriculture	AC	2	0	1	3	50	50	100	-
241AE078	Processing of Natural Fibres	AC	2	0	1	3	50	50	100	-
241AE079	Agricultural Marketing and Trade	AC	2	0	1	3	50	50	100	-
241AE080	Operation Research	AC	3	0	0	3	50	50	100	-
241AE081	Mechatronics	AC	2	0	1	3	50	50	100	-
241AE094	Machine Learning	AC	2	0	1	3	50	50	100	-
241CS072	Python Programming	AC	1	0	2	3	50	50	100	-

Minor Degree in Quantum Technologies

S.No.	Course Code	Course Name	L	T	P	C	Semester
Mandatory Courses							
1	241EC097	Survey of Quantum technologies and Application	3	0	0	3	IV
2	241EC098	Foundations of Quantum Technologies	3	0	0	3	V
3	241EC099	Basic Programming Lab (or)	1	0	2	3	V
	241EC100	Basic Laboratory Course for Quantum Technologies					
4	241EC101	Quantum Algorithms and Cryptography	12 week 3 Credit - NPTEL MOOC			3	VII/VIII
Any One course from the below							
5	241EC102	Introduction to Quantum Computation	3	0	0	3	VI
6	241EC103	Introduction to Quantum Communication	3	0	0	3	VI
7	241EC104	Introduction to Quantum Sensing	3	0	0	3	VI
8	241EC105	Introduction to Quantum Materials	3	0	0	3	VI
Any One course from the below							
9	241EC106	Engineering Foundations of Quantum Technologies	3	0	0	3	VII
10	241EC107	Solid State Physics for Quantum Technologies	3	0	0	3	VII
11	241EC108	Quantum Optics	3	0	0	3	VII
12	241EC109	Quantum Cybersecurity	3	0	0	3	VII
13	241EC110	Quantum Machine Learning	3	0	0	3	VII
Total			18	0	0	18	

2024 B.Tech Agricultural Engineering Curriculum Prerequisite Flowchart



Legends:**FC** - Foundation Level Courses**IC** - Intermediate Level Courses**AC** - Advanced Level Courses**Foundation Level Courses:****DA** – Deeksharambh**CPPT** - Crop Production and Protection Technologies**IAT** – Introduction to Agricultural Engineering**S&L** –Surveying and Levelling**WTP** – Workshop Technology and Practice**CPDS** – Computer Programming and Data Structures**ED** – Engineering Drawing**AI** – Agricultural Informatics**FBLs** – Farming Based Livelihood Systems**ESDM** – Environmental Studies and Disaster Management**CS** – Communication Skills**FMOCH** – Fluid Mechanics and Open Channel Hydraulics**EP** – Engineering Physics**EM** – Engineering Mechanics**BEGI** – Basic Electrical Gadgets and Instruments**EC** – Engineering Chemistry**M-I** –Engineering Mathematics-I**TAE** – Tractor & Automotive Engines**EP** – Engineering Physics**RES** – Renewable Energy Sources**Intermediate Level Courses:****SM** – Soil Mechanics**WH** – Watershed Hydrology**SWCE** – Soil and Water Conservation Engineerin**TOM** – Theory of Machines**ELM** – Electrical Machines**FME-I** – Farm Machinery& Equipment-I**M-II**- Engineering Mathematics-II**TSC** – Tractor Systems & Controls**TDHT** – Thermodynamics and Heat Transfer**TOS** – Theory of Structures**EDBM** – Entrepreneurship Development and Business Management**BCCE** – Building Construction& Cost Estimation**FDE** – Food and Dairy Engineering**PHECOS** – Post-harvest Engineering of Cereals, Pulses and Oilseeds**SOM** – Strength of Materials**IDE**- Irrigation and Drainage Engineering**FME-II** – Farm Machinery& Equipment II**AS&DA** – Agricultural Statistics and Data Analysis**FQS** – Food Quality and Safety**Advanced Level Courses:****WPM** –Watershed Planning and Management**MD** –Machine Design**S&MIS** –Sprinkler &Micro Irrigation Systems**BS D&A** –Bioenergy Systems: Design and Applications**SABL** – Student Activity Based Learning

Minor Degree in Agricultural Engineering (offered to other branches students):
Minor Degree in Quantum Technologies

Agricultural Engineering							Marks			Pre-requisite
Course Code	Course Name	Level	L	T	P	C	CIE	SEE	Total	
241AE082	Fundamentals of Renewable Energy Sources	FC	3	0	0	3	50	50	100	-
241AE083	Post-harvest Engineering of Cereal Crops	FC	3	0	0	3	50	50	100	-
241AE084	Ground Water Hydrology	FC	3	0	0	3	50	50	100	-
241AE085	Micro Irrigation Systems	IC	2	0	0	2	50	50	100	-
241AE086	Surface Water Hydrology (OR)	IC	3	0	0	3	50	50	100	GWH
241AE087	Land & Water Management Engineering									
241AE088	Agricultural Process Engineering & Food Quality (OR)	AC	3	0	0	3	50	50	100	PHECC
241AE089	Post-Harvest Engineering for Horticultural Produce									
241AE090	Agricultural Machinery & Equipment (OR)	AC	3	0	0	3	50	50	100	FRES
241AE091	Design of Bio-Energy systems									
Total			20			20				

S.No.	Course Code	Course Name	L	T	P	C	Semester
Mandatory Courses							
1	241EC097	Survey of Quantum technologies and Application	3	0	0	3	IV
2	241EC098	Foundations of Quantum Technologies	3	0	0	3	V
3	241EC099	Basic Programming Lab (or)	1	0	2	3	V
	241EC100	Basic Laboratory Course for Quantum Technologies					
4	241EC101	Quantum Algorithms and Cryptography	12 week 3 Credit - NPTEL MOOC			3	VII/VIII
Any One course from the below							
5	241EC102	Introduction to Quantum Computation	3	0	0	3	VI
6	241EC103	Introduction to Quantum Communication	3	0	0	3	VI
7	241EC104	Introduction to Quantum Sensing	3	0	0	3	VI
8	241EC105	Introduction to Quantum Materials	3	0	0	3	VI
Any One course from the below							
9	241EC106	Engineering Foundations of Quantum Technologies	3	0	0	3	VII
10	241EC107	Solid State Physics for Quantum Technologies	3	0	0	3	VII
11	241EC108	Quantum Optics	3	0	0	3	VII
12	241EC109	Quantum Cybersecurity	3	0	0	3	VII
13	241EC110	Quantum Machine Learning	3	0	0	3	VII
Total			18	0	0	18	