



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA 533 003, Andhra Pradesh, India
DEPARTMENT OF AGRICULTURAL ENGINEERING

COURSE STRUCTURE

For UG – R20

B. TECH – AGRICULTURAL ENGINEERING

(Applicable for batches admitted from 2020-2021)



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KAKINADA - 533 003, Andhra Pradesh, India



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I Year - I Semester

S. No.	Course Code	Subject	L	T	P	Credits
1	BS1101	Mathematics I (Calculus & Differential Equations)	3	0	0	3
2	BS1102	Principles of Soil Science and Agronomy	3	0	0	3
3	HS1101	English	3	0	0	3
4	ES1103	Engineering Workshop and IT Workshop	1	0	4	3
5	BS1108	Engineering Physics	3	0	0	3
6	HS1102	English and Communication Skills Lab	0	0	3	1.5
7	BS1102	Soil Science and Agronomy Field Lab	0	0	3	1.5
8	BS1109	Engineering Physics Laboratory	0	0	3	1.5
Total Credits						19.5

I Year – II Semester

S. No.	Course Code	Subject	L	T	P	Credits
1	BS1201	Mathematics II (Linear Algebra & Numerical Methods)	3	0	0	3
2	BS1210	Engineering Chemistry	3	0	0	3
3	ES1204	Engineering Mechanics	3	0	0	3
4	ES1201	Programming for Problem Solving Using C	3	0	0	3
5	ES1103	Engineering Drawing	3	0	0	3
6	ES1202	Programming for Problem Solving Using C Lab	0	0	3	1.5
7	BS1211	Engineering Chemistry Laboratory	0	0	3	1.5
8	ES1220	Machine Drawing and Computer Graphics	0	0	3	1.5
9	MC1201	Environmental Science	2	0	0	0
Total Credits						19.5



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II Year- I Semester

S. No	Course Code	Subject	L	T	P	Credits
1	BS	Mathematics III (Vector Calculus, Transforms and PDE)	3	0	0	3
2	PC	Surveying and Leveling	3	0	0	3
3	ES	Fluid Mechanics and Open Channel Hydraulics	3	0	0	3
4	ES	Properties and Strength of Materials	3	0	0	3
5	PC	Farm Power and Tractor Systems	3	0	0	3
6	PC	Surveying and Leveling Lab	0	0	3	1.5
7	ES	Fluid Mechanics and Open Channel Hydraulics Lab	0	0	3	1.5
8	PC	Field Operation and Maintenance of Tractors Lab	0	0	3	1.5
9	SOC	Agricultural Machinery Design using CAD/CAM Skill Oriented Course (Lab)	1	0	2	2
10	MC	Constitution of India				0
		Total Credits				21.5

II Year- II Semester

S. No	Course Code	Subject	L	T	P	Credits
1	PC	Heat and Mass Transfer	3	0	0	3
2	PC	Ground Water Hydrology, Wells and Pumps	3	0	0	3
3	PC	Theory of Structures	3	0	0	3
4	PC	Soil Mechanics	3	0	0	3
5	HSS	Managerial Economics and Financial Analysis	3	0	0	3
6	PC	Heat and Mass Transfer Lab	0	0	3	1.5
7	PC	Theory of Structures Lab	0	0	3	1.5
8	PC	Soil Mechanics Lab	0	0	3	1.5
9	SOC	Analysis/Simulation using MATLAB Skill Oriented Course (Lab)	1	0	2	2
10		Industrial/Research Internship (Mandatory) 2 Months... to be evaluated in III year I semester				
		Total Credits				21.5
		Honors (Pool-1)/Minor Courses	3	1	0	4



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III Year - I Semester

S. No	Course Code	Subject	L	T	P	Credits
1	PC	Farm Machinery and Equipment - I	3	0	0	3
2	PC	Surface Water Hydrology	3	0	0	3
3	PC	Post Harvest Engineering of Cereals, Pulses and Oilseeds	3	0	0	3
4	OE	Open Elective - I	3	0	0	3
5	PE	Professional Elective- I 1. Seed Processing and Storage Engineering 2. Greenhouse Technology 3. Tractor Design and Testing	3	0	0	3
6	PC	Theory of Machines Lab	0	0	3	1.5
7	PC	Electrical Circuits Lab	0	0	3	1.5
8	SOC	Soft Skills	1	0	2	2
9	MC	Professional Ethics and Human Values	2	0	0	0
10	PR	Summer Internship 2 Months (Mandatory) after second year (to be evaluated during V semester)				1.5
		Total Credits				21.5
		Honors (Pool-2)/Minor Courses	3	1	0	4

III Year - II Semester

S. No	Course Code	Subject	L	T	P	Credits
1	PC	Soil and Water Conservation Engineering	3	0	0	3
2	PC	Farm Machinery and Equipment - II	3	0	0	3
3	PC	Agricultural Process Engineering	3	0	0	3
4	PE	Professional Elective II 1. Food Packaging Technology 2. Watershed Management 3. Human Engineering and Safety	3	0	0	3
5	OE	Open Elective - II	3	0	0	3
6	PC	Soil and Water Conservation Engineering Lab	0	0	3	1.5
7	PC	Farm Machinery and Equipment Lab	0	0	3	1.5
8	PC	Agricultural Process Engineering Lab	0	0	3	1.5
9	SOC	Structural Design with ANSYS	1	0	2	2
10	MC	Employability Skills	2	0	0	0
11		Industrial/Research Internship (Mandatory) 2 Months... to be evaluated in IV year I semester				
		Total Credits				21.5
		Honors (Pool-3)/Minor Courses	3	1	0	4



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IV Year – I Semester

S. No	Course Code	Subject	L	T	P	Credits
1	PE	Professional Elective III 1. Irrigation and Drainage Engineering 2. Production Technology of Agricultural Machinery 3. Food Plant Design and Management	3	0	0	3
2	PE	Professional Elective IV 1. Design of Soil and Water Conservation and Farm Systems 2. Food Process Equipment Design 3. Design of Agricultural Machinery	3	0	0	3
3	PE	Professional Elective -V 1. Micro Irrigation Engineering 2. Mechatronics in Agricultural Engineering 3. Dairy and Food Engineering	3	0	0	3
4	OE	Open Elective III	3	0	0	3
5	OE	Open Elective - IV	3	0	0	3
6	HSS	Universal Human Values: 2 Understanding Harmony	3	0	0	3
7	SOC	Computational Fluid Dynamics with FLUENT	1	0	2	2
8	PR	Industrial/Research Internship 2 Months (Mandatory) after third year (to be evaluated during VII semester)				3
		Total Credits				23.0
		Honors (Pool-4)/Minor Courses	3	1	0	4

IV Year – II Semester

S. No	Course Code	Subject	L	T	P	Credits
1	PR	Major Project	0	0	0	12
		Total Credits				12.0



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HONORS PROGRAMME

S. No.	Course Name	L-T-P	Credits
POOL-1			
1	Management of Canal Irrigation System	3-1-0	4
2	Mechanics of Tillage and Traction	3-1-0	4
3	Post Harvest Engineering of Horticultural Crops	3-1-0	4
POOL-2			
1	Information Technology for Land and Water Management	3-1-0	4
2	Theory of Machines	3-1-0	4
3	Instrumentation and Process Control in Food Industry	3-1-0	4
POOL-3			
1	Landscape Irrigation Design and Management	3-1-0	4
2	Tractor Systems and Controls	3-1-0	4
3	Food Quality and Control	3-1-0	4
POOL-4			
1	Floods and Control Measures	3-1-0	4
2	Bio-energy Systems: Design and Applications	3-1-0	4
3	Aquacultural Engineering	3-1-0	4
<p>MOOC's programme will be notified by HOD at the beginning of the semester with minimum 8/12 weeks in duration to earn the 2 credits.</p>			

Professional electives which are not studied, in any form during the programme, can also be selected for Honors Program



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**MINOR PROGRAM
GENERAL TRACK
for II Year II Semester**

S. No.	Subject	L-T-P	Credits
1	Precision Farming Techniques for Protected Cultivation	3-1-0	4
2	Wasteland Development	3-1-0	4

**MINOR PROGRAM
SPECIALIZED TRACKS**

S. No.	Course Name	L-T-P	Credits
TRACK 1 Farm Machinery and Power Engineering			
1	Farm Machinery Design and Production	3-1-0	4
2	Testing and Evaluation of Tractors and Farm Equipment	3-1-0	4
3	Earth Moving Machines	3-1-0	4
TRACK 2 Soil and Water Engineering			
1	Sprinkler and Micro Irrigation Systems	3-1-0	4
2	Minor Irrigation and Command Area Development	3-1-0	4
3	Precision Farming Techniques for Protected Cultivation	3-1-0	4
TRACK 3 Processing and Food Engineering			
1	Engineering Properties of Agricultural Produce	3-1-0	4
2	Agricultural Structures and Environmental Control	3-1-0	4
3	Food Waste and By-products Utilization	3-1-0	4
4	Development of Processed Food Products	3-1-0	4
<p>MOOC's programme will be notified by HOD at the beginning of the semester with minimum 8/12 weeks in duration to earn the 2 credits.</p>			



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**OPEN ELECTIVE COURSES FOR
OTHER DEPARTMENT STUDENTS**

S. No.	Subject	L-T-P	Credits
1	Principles of Soil Science and Agronomy	3-0-0	3
2	Farm Power and Tractor Systems	3-0-0	3
3	Ground Water Hydrology, Wells and Pumps	3-0-0	3
4	Surface Water Hydrology	3-0-0	3
5	Post Harvest Engineering of Cereals, Pulses and Oilseeds	3-0-0	3
6	Soil and Water Conservation Engineering	3-0-0	3
7	Agricultural Process Engineering	3-0-0	3