



## DEPARTMENT OF APPLIED ENGINEERING

Date: 18.10.2022

### Minutes of Board of Studies Meeting




Board of Studies (BoS) meeting of B. Tech. Agricultural Engineering programme was conducted on 20.10.2022 in blended mode from 10.00 AM. The venue of meeting is AFTF 05, Seminar Hall, Department of Applied Engineering, U Block, VFSTRU, Vadlamudi. The online ZOOM platform link for virtual meeting is <https://us02web.zoom.us/j/84682182680>.

#### **Agenda of the BoS Meeting:**

1. To Discuss and finalize the curriculum structure and detailed syllabus of B. Tech. in Agricultural Engineering Programme for the regulation 2022.
2. To approve the R22 curriculum and syllabus of B. Tech. in Agricultural Engineering Programme and recommend to the Academic council.
3. To discuss modifications done on R-19 to R-22.
4. To finalize subjects list with credits.
5. To approve credit structure distribution with semester wise.
6. To evaluate one sample subject syllabus in tune with R-22.
7. To discuss evaluation pattern.
8. To discuss any other item with the permission of the chair.

The following members were present either thorough offline or online.

S. No	Name and Designation of the members	Position	Signature
1	<b>Dr. N. Naryana Rao</b> , Associate Prof & Head of AE Department, VFSTRU	Chairperson	
2	<b>Dr B.V.S. Prasad</b> , Principal Scientist (Agril Engg) & Head and Univ. Head, Acharya N.G. Ranga, Agricultural University.	External Member (Academic)	
3	<b>Dr. Vidhu Kampurath</b> , Joint Director - Plant Health Engineering, National Institute of Plant Health Management, Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture, Govt. of India, Rajendra Nagar, Hyderabad.	External Member (Academic)	online
4	<b>Dr. T. Ramesh Babu</b> Dean of School of Agri, Food Science and Technology	Member	
5	<b>Dr. Ayyanna D.S</b> Assistant Professor, Dy. HoD, Dept. of AE., VFSTR	Member	

6	<b>Dr. Sujith Bobba</b> Assistant Professor, Asst. Dean R&D, VFSTR	Member	
7	<b>Mr. Bibek B. Shrestha</b> Assistant Professor, Dept. of Applied Engineering, VFSTR	Member	
8	<b>Mr. G. Aditya</b> Assistant Professor, Dept. of Applied Engineering, VFSTR	Member	

Chairperson Dr. N. Narayana Rao and Head, department of Applied Engineering, VFSTR opened the meeting by welcoming and introducing the external members, invitees to the internal members. Chairperson presented about the *NEP 2020 Compliant Regulation - R22* which emphasis on creating *learning centric* (continuous learning and continuous assessment model), offering B.Tech., B.Tech. with Honours/ Research Honours/ Minor/ Add-on Diploma, *Dual degree* (B.Tech. + M.Tech./MBA, or M.Tech. + Ph.D.), providing multiple entry and multiple exits.

**The following points were discussed in the BoS meeting:**

1. Regulation R22.
2. Curriculum structure with credits, credits distribution.
3. 2 Modules instead of 5 units.
4. Assessment methods (Formative & Summative).
5. Grading Schemes.
6. Department pool of Electives.
7. Minor / Honor courses.
8. Student Ready Programmes.
9. 22FMPE302, Plant Protection Equipment, there is other topics such as Threshing Equipment or Intercultural Equipment (i.e. Reapers, Binders, Mowers) Combine Harvesting Equipments in the syllabus and that's why course name has been changed.
10. In 1st year 1st semester there is no provision to continue a course (professional core) i.e. 22FMPE401, "Tractor and Farm Machinery Operation and Maintenance" though out that semester. As simultaneously there are skill development training 1 & 2 which will be held outside University.
11. In 3rd Year & 1st semester there is 22PAFE301, Agricultural Structures and Environmental Control which contains cooling load in practices but in syllabus, (Lecture) there is no cooling load topic inside syllabus.

**The following resolutions made after the discussion:**

1. BoS Members approved the revised regulations, curriculum structure, syllabus of B.Tech., Agricultural Engineering programmes and it follows based on the NEP 2020. Curriculum structure is provided in Appendix-I.
2. Major restructuring has taken place in the curriculum which is oriented towards continuous learning and assessment based on Module structure.
3. Major reformation has taken place in the curriculum by offering Honours/Specialization degree or Minor degree thorough 20 more credits with additional courses.
4. The curriculum is encompassing the courses that enable employability or entrepreneurship or skill development, provided in Appendix- II.



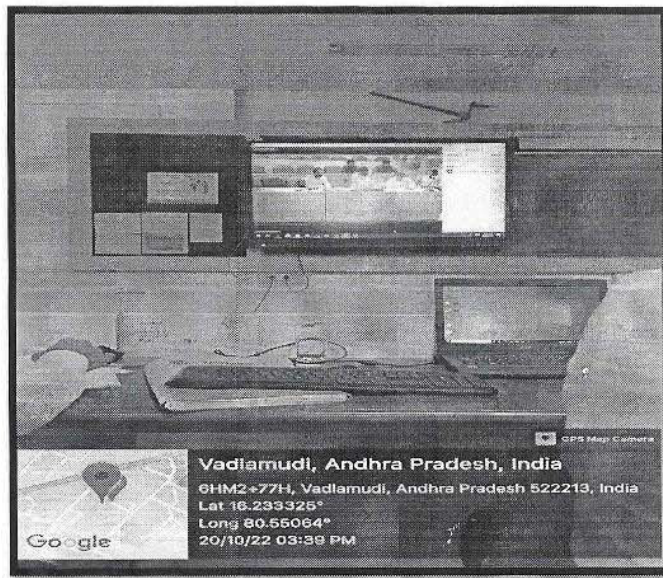
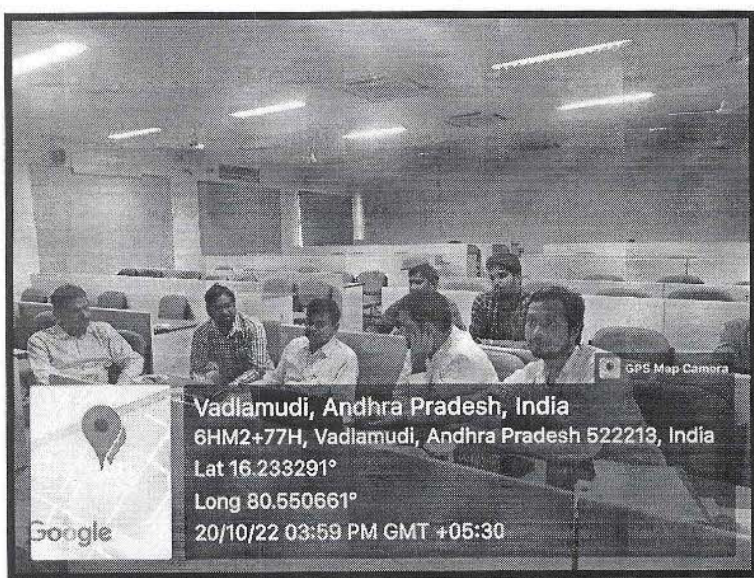
5. The significant changes are made in the content of all courses and hence the courses are considered as new courses provided in Appendix- III.
6. Total average percentage of syllabus revised was 27% compared to previous curriculum.
7. Year wise Degrees, Diploma certificates, entry and exit policy at different years can be framed after 6th Deans' recommendations given by ICAR.
8. The course title for 22FMPE302 Plant Protection Equipment is reframed as "Intercultural, Harvesting and Threshing Equipment".
9. The practical course Tractor & Farm Machinery Operation and Maintenance is shifted to fifth semester. With this addition, credits of the fifth semester will become 25.
10. Cooling load calculation must be added in Module 2 syllabus of Agricultural Structures and Environmental Control as there is cooling load calculation in practice.

Based on the suggestions given by the members, the Chairperson of BoS told that, those fruitful suggestions would be incorporated appropriately in the curriculum and syllabi of the regulation R22 and this will be recommended to the Academic Council of VFSTR for the approval.

There being no further points for discussion, the Chairperson thanks all the external, internal, invited members and announced that the meeting was adjourned.

  
Member Secretary

  
Chairperson





**VIGNAN'S**  
Foundation for Science, Technology & Research  
(Deemed to be University)  
-Estd. u/s 3 of UGC Act 1956

## DEPARTMENT OF APPLIED ENGINEERING

### APPENDIX I

#### B. Tech in Agricultural Engineering Programme: Curriculum Structure

##### I Year I Semester Structure

S. N.	Course Code	Course Name	L	T	P	C	Category	Offered By
1	22BEAS101	Ordinary Differential Equations and Linear Algebra	1	2	2	3	Basic Sciences	Mathematics
2	22BEAS102	Physics for Agricultural Engineers	2	0	2	3	Basic Sciences	Physics
3	22BEAS103	Chemistry for Agricultural Engineers	2	0	2	3	Basic Sciences	Chemistry
4	22BEAS104	Principles of Agronomy	2	0	2	3	Basic Sciences	AE
5	22BEAS105	Environmental Science and Disaster Management	2	0	2	3	Basic Sciences	Chemistry
6	22BEAS106	Engineering Mechanics	2	2	0	3	Basic Engineering	AE
7	22BEAS107	Engineering Drawing	0	0	3	2	Basic Engineering	Mechanical
8	22BEAS108	Communication Skills and Personality Development	1	0	2	2	Basic Sciences	English
9	22BEAS109	Workshop Technology and Practices	1	0	4	3	Basic Engineering	Mechanical
			Total Credits			25		
			Credit hour/Week					
			13	2	21	36		

L=Lecture; T= Tutorial; P= Practical; C=Credits



## I Year II Semester Structure

S. N.	Course Code	Course Name	L	T	P	C	Category	Offered By
1	22BEAS110	Advanced Calculus and Partial Differential Equations	1	2	2	3	Basic Sciences	Mathematics
2	22BEAS111	Surveying and Levelling	1	2	2	3	Basic Engineering	Civil
3	22BEAS112	Fluid Mechanics and Open Channel Hydraulics	1	2	2	3	Basic Engineering	Civil
4	22BEAS113	Principles of Soil Science	2	0	2	3	Basic Sciences	AE
5	22BEAS114	Computer Programing and Data Structures	1	2	2	3	IT Related Courses	Computer Science
6	22BEAS115	Applied Electronics and Instrumentation	2	0	2	3	Basic Engineering	EEE
7	22SA101	Physical Education, Sports and Games-1	0	0	2	1*	Sports and Games	Sports and Games
8	22SA102	Orientation Session	-	-	6	3*	Humanities and Management	Training and Placement
9	22TP101	Constitution of India	0	2	0	1*	Humanities and Management	Training and Placement
10	22BEAS116	Strength of Materials	1	0	2	2	Basic Engineering	Civil
			<b>Total Credits</b>			<b>20</b>		
			<b>Credit hour/Week</b>					
			<b>9</b>	<b>10</b>	<b>16</b>	<b>35</b>		

## II Year I Semester Structure

S. N.	Course Code	Course Name	L	T	P	C	Category	Offered By
1	22BEAS201	Mathematical Methods	1	2	2	3	Basic Engineering	Mathematics
2	22BEAS202	Principles of Horticultural Crops and Plant Protection	1	0	2	2	Basic Sciences	AE
3	22BEAS203	Heat and Mass Transfer	1	2	0	2	Basic Engineering	AE
4	22BEAS204	Soil Mechanics	1	0	2	2	Basic Engineering	Civil
5	22IADE201	Ground Water, Wells and Pumps	2	0	2	3	Professional Core	AE
6	22SWCE201	Watershed Hydrology	1	0	2	2	Professional Core	AE
7	22BEAS205	Theory of Machines	1	2	0	2	Basic Engineering	AE
8	22BEAS206	Electrical Machines and Power Utilization	2	0	2	3	Basic Engineering	EEE
9	22BEAS207	Entrepreneurship Development and Business Management	2	0	2	3	Basic Sciences	Management
			<b>Total Credits</b>			<b>22</b>		
			<b>Credit hour/Week</b>					
			<b>12</b>	<b>6</b>	<b>14</b>	<b>32</b>		

## II Year II Semester Structure

S. N.	Course Code	Course Name	L	T	P	C	Category	Offered By
1	22BEAS208	Thermodynamics, Refrigeration and Air Conditioning	2	0	2	3	Basic Engineering	AE
2	22BEAS209	AutoCAD Applications	0	0	4	2	Basic Engineering	AE
3	22BEAS210	Machine Design	1	2	0	2	Basic Engineering	AE
4	22FMPE201	Tractor and Automotive Engines	2	0	2	3	Professional Core	AE
5	22PAFE201	Engineering Properties of Agricultural Produce	1	0	2	2	Professional Core	AE
6	22IADE202	Irrigation Engineering	2	0	2	3	Professional Core	AE
7	22SWCE202	Soil and Water Conservation Engineering	2	0	2	3	Professional Core	AE
8	22REE201	Fundamentals of Renewable Energy Sources	2	0	2	3	Professional Core	AE
9	22ELCT201/ 202/203/204	Elective Course-1	2	0	2	3	Professional Core	AE
			<b>Total Credits</b>			<b>24</b>		
			<b>Credit Hour/Week</b>					
			<b>14</b>	<b>2</b>	<b>18</b>	<b>34</b>		

### III Year I Semester Structure

S. N.	Course Code	Course Name	L	T	P	C	Category	Offered By
1	22BEAS301	Building Construction and Cost Estimation	1	2	0	2	Basic Engineering	Civil
2	22FMPE301	Tillage and Sowing Operation	2	0	2	3	Professional Core	AE
3	22PAFE301	Agricultural Structures and Environmental Control	2	0	2	3	Professional Core	AE
4	22PAFE302	Post-Harvest Engineering of Cereals, Pulses and Oilseeds	1	2	2	3	Professional Core	AE
5	22IADE301	Sprinkler and Micro Irrigation Systems	1	0	2	2	Professional Core	AE
6	22SWCE301	Watershed Planning and Management	1	0	2	2	Professional Core	AE
7	22REE301	Renewable Power Sources	1	2	2	3	Professional Core	AE
8	22BEAS302	Design of Structures	1	0	2	2	Basic Engineering	Civil
9	22FMPE302	Tractor and Farm Machinery Operation and Maintenance	0	2	2	2	Professional Core	AE
10	22ELCT301 /302/303/304	Elective Course-2	2	0	2	3	Professional Core	AE
			<b>Total Credits</b>			<b>25</b>		
			<b>Credit hour/Week</b>					
			<b>12</b>	<b>8</b>	<b>18</b>	<b>38</b>		



### III Year II Semester Structure

S. N.	Course Code	Course Name	L	T	P	C	Category	Offered By
1	22FMPE303	Intercultural, Harvesting and Threshing Equipment	2	0	2	3	Professional Core	AE
2	22PAFE303	Post-Harvest Engineering of Horticultural Crops	1	0	2	2	Professional Core	AE
3	22SWCE302	Water Harvesting and Soil Conservation Structures	2	0	2	3	Professional Core	AE
4	22PAFE304	Dairy and Food Engineering	1	2	2	3	Professional Core	AE
5	22REE302	Bio-Energy Systems: Design and Applications	2	0	2	3	Professional Core	AE
6	22BEAS303	Web Designing and Internet Applications	1	0	2	2	IT Related Courses	IT
7	22IADE302	Drainage Engineering	1	0	2	2	Professional Core	AE
8	22FMPE304	Tractor Systems and Controls	2	0	2	3	Professional Core	AE
9	22ELCT305/ 306/307/308	Elective Course-3	2	0	2	3	Professional Core	AE
			<b>Total Credits</b>			<b>24</b>		
			<b>Credit hour/Week</b>					
			<b>14</b>	<b>2</b>	<b>18</b>	<b>34</b>		

#### IV Year I Semester Structure

S. N.	Course Code	Course Name	L	T	P	C	Category	Offered By
1	22SDT401	Skill Development Training-I	0	0	10	5	Employability & Life Skills	
2	22SDT402	Skill Development Training-II	0	0	10	5	Employability & Life Skills	
3	22ELP401	Experiential Learning on Campus	0	2	18	10	Employability & Life Skills	AE
			<b>Total Credits</b>			<b>20</b>		
			<b>Credit Hour/Week</b>					
			<b>0</b>	<b>2</b>	<b>38</b>	<b>40</b>		

#### IV Year II Semester

S. N.	Course Code	Course Name	L	T	P	C	Category	Offered By
1	22IAP401	Internship	0	2	18	10	Employability & Life Skills	
2	22ET401	Educational Tour	0	0	4	2	Educational Tour	
3	22PPRW401	Project Planning and Report Writing	0	2	18	10	Employability & Life Skills	AE
			<b>Total Credits</b>			<b>22</b>		
			<b>Credit Hour/Week</b>					
			<b>0</b>	<b>4</b>	<b>40</b>	<b>44</b>		



**List of Department Elective Courses**

<b>Category</b>	<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
Soil & Water Conservation Engineering	22ELCT201	Floods and Control Measures	2	0	2	3
	22ELCT202	Wasteland Development	2	0	2	3
	22ELCT203	Remote Sensing and GIS Applications	2	0	2	3
	22ELCT204	Management of Canal Irrigation System	2	0	2	3
Farm Machinery & Power	22ELCT301	Precision Farming Techniques for Protected Cultivation	2	0	2	3
	22ELCT302	Hydraulic Drives and Controls	2	0	2	3
	22ELCT303	Tractor Design and Testing	2	0	2	3
	22ELCT304	Farm Machinery Design and Production	2	0	2	3
Food Process Engineering	22ELCT305	Food Quality and Control	2	0	2	3
	22ELCT306	Food Packaging Technology	2	0	2	3
	22ELCT307	Development of Processed Products	2	0	2	3
	22ELCT308	Process Equipment Design	2	0	2	3

  
**Chairperson**



## DEPARTMENT OF APPLIED ENGINEERING

### APPENDIX II

#### List of Courses that Enables Employability or Entrepreneurship or Skill Development

S. N.	Year and Semester	Course Name	Employability/ Entrepreneurship/ Skill Development
1	I Year I Semester	Ordinary Differential Equations and Linear Algebra	
2	I Year I Semester	Physics for Agricultural Engineers	
3	I Year I Semester	Chemistry for Agricultural Engineers	
4	I Year I Semester	Principles of Agronomy	Skill Development
5	I Year I Semester	Environmental Science and Disaster Management	
6	I Year I Semester	Engineering Mechanics	Employability
7	I Year I Semester	Engineering Drawing	Employability
8	I Year I Semester	Communication Skills and Personality Development	Entrepreneurship
9	I Year I Semester	Workshop Technology and Practices	Skill Development
10	I Year II Semester	Advanced Calculus and Partial Differential Equations	
11	I Year II Semester	Surveying and Levelling	Skill Development
12	I Year II Semester	Fluid Mechanics and Open Channel Hydraulics	Skill Development
13	I Year II Semester	Principles of Soil Science	Skill Development
14	I Year II Semester	Computer Programing and Data Structures	Employability
15	I Year II Semester	Applied Electronics and Instrumentation	Skill Development
16	I Year II Semester	Physical Education, Sports and Games-1	
17	I Year II Semester	Orientation Session	



18	I Year II Semester	Constitution of India	
19	I Year II Semester	Strength of Materials	Skill Development
20	II Year I Semester	Mathematical Methods	
21	II Year I Semester	Principles of Horticultural Crops and Plant Protection	Skill Development
22	II Year I Semester	Heat and Mass Transfer	Skill Development
23	II Year I Semester	Soil Mechanics	Skill Development
24	II Year I Semester	Ground Water, Wells and Pumps	Skill Development
25	II Year I Semester	Watershed Hydrology	Skill Development
26	II Year I Semester	Theory of Machines	Skill Development
27	II Year I Semester	Electrical Machines and Power Utilization	Skill Development
28	II Year I Semester	Entrepreneurship Development and Business Management	Entrepreneurship
29	II Year II Semester	Thermodynamics, Refrigeration and Air Conditioning	Skill Development
30	II Year II Semester	AutoCAD Applications	Employability
31	II Year II Semester	Machine Design	Employability
32	II Year II Semester	Tractor and Automotive Engines	Employability
33	II Year II Semester	Engineering Properties of Agricultural Produce	Skill Development
34	II Year II Semester	Irrigation Engineering	Employability
35	II Year II Semester	Soil and Water Conservation Engineering	Employability
36	II Year II Semester	Fundamentals of Renewable Energy Sources	Skill Development
37	II Year II Semester	Elective Course-1	
38	III Year I Semester	Building Construction and Cost Estimation	
39	III Year I Semester	Tillage and Sowing Operation	Skill Development

40	III Year I Semester	Agricultural Structures and Environmental Control	Skill Development
41	III Year I Semester	Post-Harvest Engineering of Cereals, Pulses and Oilseeds	Employability
42	III Year I Semester	Sprinkler and Micro Irrigation Systems	Employability
43	III Year I Semester	Watershed Planning and Management	Skill Development
44	III Year I Semester	Renewable Power Sources	Skill Development
45	III Year I Semester	Design of Structures	Skill Development
46	III Year I Semester	Tractor and Farm Machinery Operation and Maintenance	Skill Development
47	III Year I Semester	Elective Course-2	
48	III Year II Semester	Intercultural, Harvesting and Threshing Equipment	Skill Development
49	III Year II Semester	Post-Harvest Engineering of Horticultural Crops	Employability
50	III Year II Semester	Water Harvesting and Soil Conservation Structures	Skill Development
51	III Year II Semester	Dairy and Food Engineering	Employability
52	III Year II Semester	Bio-Energy Systems: Design and Applications	
53	III Year II Semester	Web Designing and Internet Applications	Employability
54	III Year II Semester	Drainage Engineering	Skill Development
55	III Year II Semester	Tractor Systems and Controls	Employability
56	III Year II Semester	Elective Course-3	
57	IV Year I Semester	Skill Development Training-I	Employability
58	IV Year I Semester	Skill Development Training-II	Employability
59	IV Year I Semester	Experiential Learning on Campus	Entrepreneurship
60	IV Year II Semester	Internship	Employability
61	IV Year II Semester	Educational Tour	



62	IV Year II Semester	Project Planning and Report Writing	Employability/ Entrepreneurship
63		Floods and Control Measures	Skill Development
64		Wasteland Development	Skill Development
65		Remote Sensing and GIS Applications	Employability
66		Management of Canal Irrigation System	Skill Development
67		Precision Farming Techniques for Protected Cultivation	Employability
68		Hydraulic Drives and Controls	Skill Development
69		Tractor Design and Testing	Employability
70		Farm Machinery Design and Production	Employability
71		Food Quality and Control	Employability
72		Food Packaging Technology	Employability
73		Development of Processed Products	Skill Development
74		Process Equipment Design	Employability

*N. Nagesh Kumar*  
Chairperson



## DEPARTMENT OF APPLIED ENGINEERING

### APPENDIX III

#### List of New Courses in the R22 Curriculum

S. N.	Year and Semester	Course Name
1	I Year I Semester	Ordinary Differential Equations and Linear Algebra
2	I Year I Semester	Physics for Agricultural Engineers
3	I Year I Semester	Chemistry for Agricultural Engineers
4	I Year I Semester	Principles of Agronomy
5	I Year I Semester	Environmental Science and Disaster Management
6	I Year I Semester	Engineering Mechanics
7	I Year I Semester	Engineering Drawing
8	I Year I Semester	Communication Skills and Personality Development
9	I Year I Semester	Workshop Technology and Practices
10	I Year II Semester	Advanced Calculus and Partial Differential Equations
11	I Year II Semester	Surveying and Levelling
12	I Year II Semester	Fluid Mechanics and Open Channel Hydraulics
13	I Year II Semester	Principles of Soil Science
14	I Year II Semester	Computer Programing and Data Structures
15	I Year II Semester	Applied Electronics and Instrumentation
16	I Year II Semester	Physical Education, Sports and Games-1
17	I Year II Semester	Orientation Session



18	I Year II Semester	Constitution of India
19	I Year II Semester	Strength of Materials
20	II Year I Semester	Mathematical Methods
21	II Year I Semester	Principles of Horticultural Crops and Plant Protection
22	II Year I Semester	Heat and Mass Transfer
23	II Year I Semester	Soil Mechanics
24	II Year I Semester	Ground Water, Wells and Pumps
25	II Year I Semester	Watershed Hydrology
26	II Year I Semester	Theory of Machines
27	II Year I Semester	Electrical Machines and Power Utilization
28	II Year I Semester	Entrepreneurship Development and Business Management
29	II Year II Semester	Thermodynamics, Refrigeration and Air Conditioning
30	II Year II Semester	AutoCAD Applications
31	II Year II Semester	Machine Design
32	II Year II Semester	Tractor and Automotive Engines
33	II Year II Semester	Engineering Properties of Agricultural Produce
34	II Year II Semester	Irrigation Engineering
35	II Year II Semester	Soil and Water Conservation Engineering
36	II Year II Semester	Fundamentals of Renewable Energy Sources
37	II Year II Semester	Elective Course-1
38	III Year I Semester	Building Construction and Cost Estimation
39	III Year I Semester	Tillage and Sowing Operation
40	III Year I Semester	Agricultural Structures and Environmental Control

41	III Year I Semester	Post-Harvest Engineering of Cereals, Pulses and Oilseeds
42	III Year I Semester	Sprinkler and Micro Irrigation Systems
43	III Year I Semester	Watershed Planning and Management
44	III Year I Semester	Renewable Power Sources
45	III Year I Semester	Design of Structures
46	III Year I Semester	Tractor and Farm Machinery Operation and Maintenance
47	III Year I Semester	Elective Course-2
48	III Year II Semester	Intercultural, Harvesting and Threshing Equipment
49	III Year II Semester	Post-Harvest Engineering of Horticultural Crops
50	III Year II Semester	Water Harvesting and Soil Conservation Structures
51	III Year II Semester	Dairy and Food Engineering
52	III Year II Semester	Bio-Energy Systems: Design and Applications
53	III Year II Semester	Web Designing and Internet Applications
54	III Year II Semester	Drainage Engineering
55	III Year II Semester	Tractor Systems and Controls
56	III Year II Semester	Elective Course-3
57	IV Year I Semester	Skill Development Training-I
58	IV Year I Semester	Skill Development Training-II
59	IV Year I Semester	Experiential Learning on Campus
60	IV Year II Semester	Internship
61	IV Year II Semester	Educational Tour
62	IV Year II Semester	Project Planning and Report Writing
63		Floods and Control Measures
64		Wasteland Development

65		Remote Sensing and GIS Applications
66		Management of Canal Irrigation System
67		Precision Farming Techniques for Protected Cultivation
68		Hydraulic Drives and Controls
69		Tractor Design and Testing
70		Farm Machinery Design and Production
71		Food Quality and Control
72		Food Packaging Technology
73		Development of Processed Products
74		Process Equipment Design

**Chairperson**