

**COURSE CURRICULAM**  
**DEPARTMENT OF AGRICULTURAL ENGINEERING**  
**HALDIA INSTITUTE OF TECHNOLOGY**

**Chapter – 1**  
**General, Course Structure & Theme**  
**&**  
**Semester- wise Credit Distribution**

**A. Definition of credit**

1 Hr. Lecture (L) per week	1 credit
1 Hr. Tutorial (T) per week	1 credit
1 Hr. Practical (P) per week	0.5 credits

**B. Range of credits**

A range of credits is from 150 – 160 for a student to be eligible to get Under Graduate degree in Engineering. A student will be eligible to get Under Graduate degree with Honours or additional Minor Engineering, if he/ she complete an additional 20 credits. These could be acquired through MOOCs.

All UG courses (B. Tech. Programs) under autonomy include a range of credits from 160 to 165.

**C. Course Structure:**

S. No.	Category	As per AICTE	Agricultural Engineering Curriculum
1	Humanities and Social Sciences including Management courses	12*	15
2	Basic Science courses	25*	23
3	Engineering Science courses including workshop, drawing, basic of electrical/mechanical/computer etc.	24*	26.5
4	Professional core courses	48*	47
5	Professional Elective courses relevant to chosen specialization/branch	18*	15
6	Open subjects –Electives from other technical and/or emerging subjects	18*	16.5
7	Project work, seminar and internship in industry or elsewhere	15*	17

8	Mandatory Courses [Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Knowledge Tradition]	(non-credit)	4
<b>Total</b>		<b>160*</b>	<b>164</b>

\*Minor variation is allowed as per need of the respective disciplines

## SEMESTER - I

Theory							
SI No	Subject Name	Subject Code	Marks	L	T	P	Credit
1	Mathematics-I[Group-A&B]	BS-M101	100	3	1	0	4
2	Physics-I[Group-A] /Chemistry-I[Group-B]	BS-PH101/ BS-CH101	100	3	1	0	4
3	Basic Elec. & Electro. Engg. [Group-A] / Programming for problem solving [Group-B]	ES-EE101/ ES-CS 101	100	3	1	0	4
4	EnglishLanguageandTechnical Communication.[Group-B]	HM-HU101	100	2	0	0	2
<b>TotalMarks:300</b>				<b>TotalCredit:</b>		<b>12.0[Group-A]</b>	
<b>TotalMarks:400</b>				<b>TotalCredit:</b>		<b>14.0[Group-B]</b>	
Practical / Sessional / Tutorial							
5	Physics-I Lab[Group-B]/ Chemistry-I Lab[Group-A]	BS-PH191/ BS-CH191	100	0	0	3	1.5
6	Basic Elec. & Electro. Engg. Lab[Group- A] / Programming Lab[Group-B]	ES-EE191/ ES-CS191	100	0	0	3	1.5
7	Workshop Practice [Group-A]/ Engg. Drawing [Group-B]	ES-ME191/ ES-ME192	100	1	0	3	2.5
8	Language Lab[Group-B]	HM-HU191	100	0	0	2	1
Extra Curricular Activity							
9	NSS[Group-A]						
<b>Total Marks: 300</b>				<b>Total Credit:</b>		<b>5.5[Group-A]</b>	
<b>TotalMarks:400</b>				<b>TotalCredit:</b>		<b>6.5[Group-B]</b>	

## SEMESTER-II

<b>Theory</b>							
<b>Sl No</b>	<b>Subject Name</b>	<b>Subject Code</b>	<b>Marks</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
1	Mathematics-II [Group-A & B]	BS-M 201	100	3	1	0	4
2	Chemistry-I [Group-A]/ Physics-I [Group-B]	BS-CH 201/ BS-PH 201	100	3	1	0	4
3	Programming for problem solving [Group-A]/ Basic Elec. & Electro. Engg. [Group-B]	ES-CS 201 / ES-EE 201	100	3	1	0	4
4	English Language and Technical Communication [Group-A]	HM-HU 201	100	2	0	0	2
<b>Total Marks: 400 Total Credit: 14.0 [Group-A]</b>							
<b>Total Marks: 300 Total Credit: 12.0 [Group-B]</b>							
<b>Practical</b>							
5	Chemistry-I Lab [Group-B]/ Physics-I Lab [Group-A]	BS-CH 291/ BS-PH 291	100	0	0	3	1.5
6	Programming Lab [Group-A]/ Basic Elec. & Electro. Engg. Lab[Group-B]	ES-CS 291/ ES-EE 291	100	0	0	3	1.5
7	Workshop Practice [Group-B] Engg. Drawing [Group-A] /	ES-ME291 /ES-ME292	100	1	0	3	2.5
8	Language Lab[Group-A]	HM-HU 291	100	0	0	2	1
<b>Extra Curricular Activity</b>							
9	NSS [Group-B]						
<b>Total Marks: 400 Total Credit: 6.5 [Group-A]</b>							
<b>Total Marks: 300 Total Credit: 5.5[Group-B]</b>							

**SEMESTER – III**

<b>Theory</b>							
<b>Sl. No.</b>	<b>Subject Name</b>	<b>Subject Code</b>	<b>Marks</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
1	Engineering Thermodynamics & Heat Engines	ES-AE 301	100	3	0	0	3
2	Surveying and Levelling	ES-AE 302	100	3	0	0	3
3	Fluid Mechanics and Open Channel Hydraulics	PC-AE 301	100	3	0	0	3
4	Agriculture for Engineers	PC-AE 302	100	3	0	0	3
5	Extension Education	PC-AE 303	100	3	0	0	3
6	Professional Ethics & IPR	HM-AE 301	100	3	0	0	3
<b>Total Marks: 600</b>				<b>Total Credit: 18</b>			
<b>Practical/Sessional/Tutorial</b>							
1	Surveying and Levelling Lab	ES-AE 391	100	0	0	3	1.5
2	Fluid Mechanics Lab	PC-AE 391	100	0	0	3	1.5
3	Technical Seminar and Report Writing	SI-AE 381	100	0	2	0	2
4	NSS		100	0	0	3	0
<b>Total Marks: 300</b>				<b>Total Credit: 5</b>			
<b>Total Credit</b>						<b>23(18+5)</b>	

**SEMESTER – IV**

<b>Theory</b>							
<b>Sl. No.</b>	<b>Paper Name</b>	<b>Paper Code</b>	<b>Marks</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
1	Refrigeration & Air Conditioning	ES-AE 401	100	3	0	0	3
2	Soil Mechanics	PC-AE 401	100	3	0	0	3
3	Theory of Machine and Machine Design	PC-AE 402	100	3	0	0	3
4	Watershed Hydrology	PC-AE 403	100	3	0	0	3
5	Numerical Methods & Statistical Methods	BS-AE 401	100	3	0	0	3
6	Environmental Science	MC-AE 401	100	2	0	0	2
7	Modelling and simulation in agriculture	VAC-AE 401	100	3	0	0	0
<b>Total Marks: 600</b>				<b>Total Credit: 17</b>			
<b>Practical</b>							
1	Soil Mechanics Lab	PC-AE 491	100	0	0	3	1.5
2	Watershed Hydrology Lab	PC-AE 492	100	0	0	3	1.5
3	Numerical Methods & Statistical Methods Lab	BS-AE 491	100	0	0	2	1
<b>Total Marks: 300</b>				<b>Total Credit: 4</b>			
<b>Total</b>						<b>21 (17+4)</b>	

**SEMESTER – V**

<b>Theory</b>							
<b>Sl. No.</b>	<b>Subject Name</b>	<b>Subject Code</b>	<b>Marks</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
1	Farm Machinery & Equipment	PC-AE 501	100	3	0	0	3
2	Irrigation & Drainage Engineering	PC-AE 502	100	3	0	0	3
3	Post Harvest Engineering	PC-AE 503	100	3	0	0	3
4	Heat and Mass Transfer	PC-AE 504	100	3	0	0	3
5	Professional Elective – I (Crop Production/Plastic applications in Agriculture/Seed Technology and Processing)	PE-AE 501 (A/B/C)	100	3	0	0	3
6	Open Elective – I (Fundamentals of Renewable Energy Sources/Bio-energy Systems: Design and Applications/ Building Construction and Cost Estimation)	OE-AE 501 (A/B/C)	100	3	0	0	3
7	Agriculture Economics	HM-AE 501	100	3	0	0	3
<b>Total Marks: 700</b>				<b>Total Credit: 21</b>			
<b>Practical &amp; Sessional</b>							
1	Farm Machinery Lab	PC-AE 591	100	0	0	3	1.5
2	Irrigation & Drainage Engineering Lab	PC-AE 592	100	0	0	3	1.5
3	Post Harvest Engineering Lab	PC-AE 593	100	0	0	2	1
4	NSS		100	0	0	3	0
<b>Total Marks: 300</b>				<b>Total Credit: 4</b>			
<b>Total Credit</b>						<b>25(21+4)</b>	

**SEMESTER – VI**

<b>Theory</b>							
<b>Sl. No.</b>	<b>Subject Name</b>	<b>Subject Code</b>	<b>Marks</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
1	Soil and Water Conservation Engineering	PC-AE 601	100	3	0	0	3
2	Entrepreneurship Development & Business Management	HM-AE 601	100	3	0	0	3
3	Professional Elective – II (Groundwater, Wells and Pumps/ Watershed Planning & Management/ Pressurised Irrigation System)	PE-AE 601 (A/B/C)	100	3	0	0	3
4	Professional Elective – III (Tractor and Farm Machinery Operation and Maintenance/ Tractor Systems and Controls/ Pump Engineering & Hydraulic Control)	PE-AE 602 (A/B/C)	100	3	0	0	3
5	Open Elective – II (Database Management System/ Data Structure & Algorithm/Web Designing and Internet Applications)	OE-AE 601 (A/B/C)	100	3	0	0	3
6	Ethics in Engineering Practice/	MC-AE 601	100	2	0	0	2



	Essence of Indian Knowledge Tradition						
<b>Total Marks: 600</b>				<b>Total Credit: 17</b>			
<b>Practical</b>							
1	Soil and Water Conservation Engineering Lab	PC-AE 691	100	0	0	3	1.5
2	Open Elective – II Lab (Database Management System Lab)	OE-AE 691	100	0	0	3	1.5
3	Industrial Internship – I	SI-AE 681	100	0	2	0	2
<b>Total Marks: 300</b>				<b>Total Credit: 5</b>			
<b>Total Credit</b>							<b>22(17+5)</b>

**SEMESTER – VII**

<b>Theory</b>							
<b>Sl. No.</b>	<b>Subject Name</b>	<b>Subject Code</b>	<b>Marks</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
1	Dairy and Food Engineering	PC-AE 701	100	3	0	0	3
2	Professional Elective – IV (Waste and By-Product Utilization/Food Packaging Technology/Food quality management)	PE-AE 701 (A/B/C)	100	3	0	0	3
3	Professional Elective – V (Wasteland Development/ Minor Irrigation and Command Area Development / Floods and Control Measures)	PE-AE 702 (A/B/C)	100	3	0	0	3
4	Open Elective –III (Smart Agriculture/Management of Canal Irrigation System/ Precision Farming Techniques for Protected Cultivation)	OE-AE 701 (A/B/C)	100	3	0	0	3
5	Open Elective – IV (Remote Sensing and GIS Application/ Mechanics of Tillage and Traction/ Development of Processed Product)	OE-AE 702 (A/B/C)	100	3	0	0	3
<b>Total Marks: 500</b>				<b>Total Credit: 15</b>			
<b>Practical</b>							
1	Dairy and Food Engineering Lab	PC-AE 791	100	0	0	2	1
2	Industrial Internship – II	SI-AE 781	100	0	3	0	2
3	Project Work and Presentation – I	PW-AE 781	100	-	-	-	4
4	NSS		100	0	0	3	0
<b>Total Marks: 300</b>				<b>Total Credit: 7</b>			
<b>Total Credit</b>							<b>22(15+7)</b>

**SEMESTER – VIII**

<b>Theory</b>							
<b>Sl. No.</b>	<b>Subject Name</b>	<b>Subject Code</b>	<b>Marks</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
1	Open Elective – V (Auto CAD applications/Wind Power Technology and System/Photovoltaic Technology and System)	OE-AE 801 (A/B/C)	100	3	0	0	3
2	Nano science and Technology in Agriculture	VAC-AE 801	100	3	0	0	0
<b>Total Marks: 100</b>			<b>Total Credit: 3</b>				
<b>Practical &amp; Sessional</b>							
1	Project Work and Presentation/Viva voce – II	PW-AE 881	100	-	-	-	4
2	Industrial Internship – III	SI-AE 881	100	0	0	3	3
<b>Total Marks: 200</b>			<b>Total Credit: 7</b>				
<b>Total Credit</b>							<b>10(3+7)</b>