

AGRICULTURAL STRUCTURES AND ENVIRONMENTAL CONTROL (PEC-I)			
Course Code	21AG642	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	(3:0:0:0)	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03
Course Objectives: <ul style="list-style-type: none">To enable the student to understand the principles and acquire the knowledge on various aspects in farmstead design and constructionDesign and construction of farm structures like dairy barns, barn for poultry, compost pit, fodder silos, farm fencing, implement shedsGrain storage structures and the design and construction of silos and farm roads, sewage system, rural living and developmentTo make students familiar with different farm structures with environmental control Parameters			
Teaching-Learning Process (General Instructions) <p>These are sample strategies; which teachers can use to accelerate the attainment of the various course outcomes.</p> <ol style="list-style-type: none">Adopt different types of teaching methods to develop the outcomes through PowerPoint presentations and Video demonstrations or simulations.Chalk and Talk method for Problem Solving.Arrange visits to show the live working models other than laboratory topics.Adopt collaborative (Group Learning) Learning in the class.Adopt Problem Based Learning (PBL), which fosters students Analytical skills and develops thinking skills such as evaluating, generalizing, and analysing information.Conduct Laboratory Demonstrations and Practical Experiments to enhance experiential skills.			
Module-1 <p>Planning and layout of farmstead, Physiological reactions of livestock to solar radiation and other environmental factors, Livestock production facilities, BIS, Standards for dairy, piggery, poultry and other farm structures.</p>			
Teaching-Learning Process	<ol style="list-style-type: none">PowerPoint PresentationChalk and Talk are used for Problem Solving (In-general)Video demonstration or SimulationsLaboratory Demonstrations and Practical Experiments		
Module-2 <p>Design, construction and cost estimation of farm structures; animal shelters, compost pit, fodder silo, fencing and implement sheds, barn for cows, buffalo, poultry, etc.,: Design and construction of rural grain storage system, Engineering for rural living and development, rural roads, their construction cost and repair and maintenance.</p>			
Teaching-Learning Process	<ol style="list-style-type: none">PowerPoint PresentationChalk and Talk are used for Problem Solving (In-general)Video demonstration or SimulationsLaboratory Demonstrations and Practical Experiments		
Module-3 <p>Traditional storage structures and their improvements, Improved storage structures (CAP, hermetic storage, Pusa bin, RCC ring bins), Design consideration for grain storage godowns, Bag storage structures, Shallow and Deep bin, Calculation of pressure in bins, Storage of seeds.</p>			
Teaching-Learning Process	<ol style="list-style-type: none">PowerPoint PresentationChalk and Talk are used for Problem Solving (In-general)Video demonstration or SimulationsLaboratory Demonstrations and Practical Experiments		
Module-4			

Sources of water supply, Norms of water supply for human being and animals, drinking water standards and water treatment suitable to rural community, Site and orientation of building in regard to sanitation, community sanitation system; sewage system its design, cost and maintenance, design of septic tank for small family.	
Teaching-Learning Process	<ol style="list-style-type: none"> 1. PowerPoint Presentation 2. Chalk and Talk are used for Problem Solving (In-general) 3. Video demonstration or Simulations 4. Laboratory Demonstrations and Practical Experiments
Module-5	
Estimation of power requirement for domestic and irrigation, source of power supply, use of alternate source of energy, electrification of rural Housing, Scope, importance and need for environmental control, Renewable and non-renewable resources and their equitable use, concept of eco system, biodiversity of its conservation, environmental pollution and their control, solid waste management system, BOD and COD of food plant waste, primary and secondary treatment of food plant waste.	
Teaching-Learning Process	<ol style="list-style-type: none"> 1. PowerPoint Presentation 2. Chalk and Talk are used for Problem Solving (In-general) 3. Video demonstration or Simulations 4. Laboratory Demonstrations and Practical Experiments
Course outcome (Course Skill Set) At the end of the course the student will be able to : <ol style="list-style-type: none"> 1. Understand the importance of planning and lay out of a farmstead 2. Know about various standards for various dairy, piggery, poultry and other farm structures. 3. Know about the different farm storage structures, silos, compost pit, implement sheds, farm houses, threshing floors, farm roads, fencing, water supply, sewage systems, and septic tanks 4. Know about rural electrification, concepts of eco system, bio-diversity, environmental pollution and control, solid waste, plant waste management 5. To prepare estimate for different farm buildings, structures, roads, fencing and construction, repair and maintenance of farm structures 	

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination(SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together

Continuous Internal Evaluation:

Three Unit Tests each of **20 Marks (duration 01 hour)**

1. First test at the end of 5th week of the semester
2. Second test at the end of the 10th week of the semester
3. Third test at the end of the 15th week of the semester

Two assignments each of **10 Marks**

4. First assignment at the end of 4th week of the semester
5. Second assignment at the end of 9th week of the semester

Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for **20 Marks (duration 01 hours)**

6. At the end of the 13th week of the semester

The sum of three tests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be **scaled down to 50 marks**

(to have less stressed CIE, the portion of the syllabus should not be common /repeated for any of the methods of the CIE. Each method of CIE should have a different syllabus portion of the course).

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

Semester End Examination:

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject (**duration 03 hours**)

1. The question paper will have ten questions. Each question is set for 20 marks.
2. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module.

The students have to answer 5 full questions, selecting one full question from each module

Suggested Learning Resources:**Books**

1. Pandey, P.H. Principles and practices of Agricultural Structures and Environmental Control, Kalyani Publishers, Ludhiana
2. Ojha, T.P. and Michael, A.M. Principles of Agricultural Engineering, Vol.1, Jain Brothers, Karol Bag, New Delhi
3. Nathanson, J.A. Basic Environmental Technology, Prentice Hall of India, New Delhi
4. Garg, S.K. Water Supply Engineering, Khanna Publishers, New Delhi
5. Dutta, B.N. Estimating and Costing in Civil Engineering, Dutta & Co, Luc know
6. Sahay, K.M. and Singh, K.K. Unit Operations of Agricultural Processing, Vikas pub.pvt. Ltd, Noida
7. Banerjee, G.C. A Text Book of Animal Husbandry, Oxford IBH Pub. Co., New Delhi

Web links and Video Lectures (e-Resources):**Activity Based Learning (Suggested Activities in Class)/ Practical Based learning**

- Quizzes
- Assignments
- Seminars
- Mini Projects


H.O.D.

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