GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

Course Curriculum

AGRICULTURE FOR ENGINEERS
(Code: 3316305)

Diploma Programme in which this course is offered	Semester in which offered
Agricultural Engineering	1ST

1. RATIONALE.

Agriculture for engineering, as it name suggest that the word agriculture means combine use of soil, water and produce some product for human need. This course will help the student to learn the relation between soil, water and plant, also how soil formed and their physical and chemical characteristics, about different cropping system, essential plant nutrition, soil and climatic requirement for fruits, vegetables, and floriculture crops, also the basic knowledge about weed, tillage, tilth and fertilizer application. By getting this knowledge student can solve many problem in the field of agriculture. They easily suggest the farmer about different topics related to agriculture and also give advice to do work in a proper ways.

2. COMPETENCY.

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competencies……

- Apply the knowledge about various parameters like cropping system, fertilizer application, climate required for various crops, fruits, vegetable, tillage, and many more thing practically on the field itself.

3. COURSE OUTCOMES.

4. TEACHING AND EXAMINATION SCHEME.

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PA	ESE	PA	150
03	00	02	05	70	30	30	20	

Legends: L-Lecture; T – Tutorial/Teacher Guided Theory Practice; P -Practical; C – Credit, ESE -End Semester Examination; PA - Progressive Assessment

5. COURSE DETAILS.

Unit	Outcomes (in cognitive domain)	Major Learning Topics and Sub-topics
Unit – I SOIL	1.1 Discuss about origin of soil 1.2 Discuss soil forming process, physical property soil and soil types 1.3 Learn about soil inorganic colloids soil inorganic matter 1.4 Check quality of irrigation water 1.5 Learn about various plant nutrition & fertilizers and its use.	1.1:-Nature and origin of soil; soil forming rocks and minerals, their classification and composition 1.2:- Soil forming processes, classification of soils – soil taxonomy orders; important soil physical properties; and their importance; soil particle distribution 1.3:- Soil inorganic colloids – their composition, properties and origin of charge; ion exchange in soil and nutrient availability 1.4:- soil organic matter – its composition and decomposition, effect on soil fertility; soil reaction – acid, saline and sodic soils 1.5:-Quality of irrigation water 1.6:-Essential plants nutrients – their functions and deficiency symptoms in Plants 1.7:-Important inorganic fertilizers and their reactions in soils
Unit– II AGRONOMY	2.1 Define agronomy and classify different crops 2.2 State effect of different weather parameters on crop growth and development 2.3 Define tillage and tilth 2.4 Explain relation between soil water and plant 2.5 Learn about different weeds and how to control it 2.6 Define crop rotation and state its importance with different cropping system	2.1:-Definition and scope of agronomy 2.2:-Classification of crops 2.3:-Effect of different weather parameters on crop growth and development 2.4:-Principles of tillage, tilth and its characteristics 2.5:-Soil water plant relationship and water requirement of crops 2.6:-weeds and their control 2.7:-Crop rotation, cropping systems, Relay cropping and mixed cropping

Unit	Outcomes (in cognitive domain)	Major Learning Topics and Sub-topics
Unit–III HORTICULTURE	3.1 Define scope of horticulture and 3.2 Discuss different requirements for fruits and vegetables and floriculture 3.3 State Criteria for site selection, layout and planting methods, nursery raising 3.4 Classify plant growing structure 3.5 Explain Fertilizer application, fertigation, irrigation methods 3.6 Learn Harvesting, grading and packaging, post-harvest practices and learn how to use different tools	3.1:-Scope of horticultural and vegetable crops 3.2:-Soil and climatic requirements for fruits, vegetables and floriculture crops, improved varieties 3.3:-Criteria for site selection, layout and planting methods, nursery raising 3.4:-Macro and micro propagation methods 3.5:-Plant growing structures, pruning and training 3.6:-Fertilizer application, fertigation, irrigation methods 3.7:-Harvesting, grading and packaging, post-harvest practices 3.8:-Garden tools, management of orchard 3.9:-Extraction and storage of vegetables seeds

6. SUGGESTED SPECIFICATION TABLE WITH HOURS AND MARKS (THEORY)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
1	Soil	12	04	06	04	14
2	Agronomy	14	10	12	06	28
3	Horticulture	16	08	08	12	28
TOTAL		42	22	26	22	70

Legends: R = Remember U= Understand; A= Apply and above levels (Bloom's revised taxonomy).

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

General Notes:

1. If midsem test is part of continuous evaluation, unit numbers I and II are to be considered.
2. Ask the questions from each topic as per marks weightage. Numerical questions are to be asked only if it is specified. Optional questions must be asked from the same topic.
3. In examination, example of same chapter is to be asked in place of example.

7. SUGGESTED LIST OF EXERCISES/PRACTICALS.

The exercises/practical/experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency. Following is the list of exercises/practical/experiments for guidance.

Sr. No.	Unit No.	Practical Exercises (outcomes in Psychomotor Domain)	Teaching Hours
1	1	Identification of rocks and minerals;	02
2	1	Examination of soil profile in the field	02
3	1	Determination of bulk density; particle density and porosity of soil;	02
4	1	Determination of organic carbon of soil	02
5	2	Identification of crops and their varieties seeds and weeds	02
6	2	Fertilizer application methods	02
7	2	Different weed control methods	02
8	3	Judging maturity time for harvesting of crop	02
9	3	Study of seed viability and germination test;	02
10	3	Identification and description of important ; flowers and vegetables crops	04
11	3	Study of different garden tools	02
12	3	Preparation of nursery bed;	02
13	3	Practices of pruning and training in some important fruit crops.	02
		Total	28

8 SUGGESTED LEARNING RESOURCES

A. List of Books

Sr No.	Title Of Book	Author	Publication
1	The Nature and Properties of Soil	N.C. Brady and R.R. Weil	-
2	Chemistry of Soil	E.E. Bear	-
3	Principles of Agronomy	T. Y. Reddy and G. H. Shankara Reddy	-
4	Fundamentals of Agronomy	Rajat D.	-
5	Introductuion of Agronomy	V. W. Vaidya and K. R. Shahastrabudher	-
6	Principles of Horticulture	Denison	-
7	Principles of Horticulture	Prasad and Kumar	-

B. List of Major Equipment/ Instrument

1.

C. List of Software/Learning Websites