RAFFLES UNIVERSITY

# TEACHING PLAN: Fundamental of Agronomy

| SCHOOL: (SOAS) SCHOOL OF AGRICULTURAL SCINCES | ACADEMIC SESSION: 2023 – 2024 | FOR STUDENTS' BATCH: 2023-2027 |
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| 1 | Course No. | AAG-T-101 |
| 2 | Course Title | **Fundamental of Agronomy** |
| 3 | Credits | 3+1 |
| 4 | Learning Hours | Contact Hours: 72; Assessment: 9; Guided Study: 9; Total hours: 90 |
| 5 | Course Objective | **1.** To provide a basic understanding of emerging problems in the fields of agriculture by organizing visits to agricultural fields, nurseries and orchards.<br>**2.** To bestow knowledge regarding various modern techniques used in farming for sustainable agriculture in India<br>**3.** To provide a basic understanding of the market and post-harvest handling of agricultural produce<br>**4.** To provide detailed knowledge on the subject to improve the farmer's condition by their contributions regarding basic and modern knowledge about organic farming<br>**5.** Learn to follow scientific and economic approach along with agricultural production and effective use of land. |
| 6 | Course Outcomes | 1. In modern terminology however the word has come to mean and denote a branch of science dealing with all aspects of crop cultivation and production.<br>2. A study of agronomy often involves a summoning of resources from related disciplines such as Botany, Soil Science, Irrigation, and plant protection, Plant Genetics and Breeding, Agro-meteorology etc.<br>3. In a more fundamental sense it can be categorized as an applied Science, the object of which is crop cultivation and management for the purpose of producing food for humans, feed for animals as well as raw materials for the industry.<br>4. Knowledge about Indian Agriculture and importance, present status, scope and future prospect.<br>5. Cropping seasons of India. Soil formation, classification, physical, chemical properties. Identification of important crops and crop seeds. |
| 7 | **Outline syllabus:** | |

| 7.01 | Paper Code | Unit | Introduction | Page Numbers[1] | Lectures |
|---|---|---|---|---|---|
| 7.02 | AAG-T-101 | **Unit I (Basic Introduction)** | **1.** Agronomy and its scope, | 1-7 | **1** |
| | | | **2.** Seeds and sowing, | 54 | **2** |
| | | | **3.** Tillage and tilth, | 203-215 | **2** |
| | | | **4.** Crop density and geometry, | | **1** |
| | | | **5.** Crop nutrition, manures and fertilizers, nutrient use efficiency. | 301-306 | **3** |
| | | **Unit II (Irrigation & Water management)** | 1. Water resources, | 375-388 | **1** |
| | | | 2. Soil-plant-water relationship & crop water requirement, | 390-429 | **2** |
| | | | 3. Water use efficiency, | 502 | **1** |
| | | | 4. Irrigation- scheduling criteria and methods, | | **1** |
| | | | 5. Quality of irrigation water, | 517-524 | **1** |
| | | | 6. Water logging. | 524 | **1** |
| | | **Unit III (Weed Management)** | 1. Weeds- importance, classification, | 551-555 | **2** |
| | | | 2. Crop weed competition, | 561 | **1** |
| | | | 3. allelopathy | 562 | **2** |

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| | | | 4. Concepts of weed management- principles and methods,<br>5. herbicides- classification, selectivity and resistance, | 564-572<br>572-574 | **4** |
| | | **Unit IV (Growth & Development & Plant Ideotype)** | 1. Growth and development of crops, factors affecting growth and development,<br>2. Plant Ideotypes,<br>3. Crop rotation and its principles,<br>4. Adaptation and distribution of crops,<br>5. Crop management technologies in problematic areas,<br>6. Harvesting and threshing of crops. | | **2**<br>**1**<br>**1**<br>**1**<br>**2**<br><br>**2** |

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| **8** | **Course Evaluation** | |
| **8.1** | **CA: 10%** | |
| **8.1.1** | **Attendance** | 25 % |
| **8.1.2** | **Homework** | 2 Assignments, 50% |
| **8.1.3** | **Quizzes** | 2 Quizzes, 25% |
| **8.1.4** | **Projects** | - |
| **8.1.5** | **Presentation** | - |
| **8.1.6** | **Any other** | Practical Examination- 30% |
| **8.2** | **MTE** | 10% |
| **8.3** | **End-term examination: 50%** | |
| **9** | **Text Books & References** | |
| **9.1** | **Text book** | 1. |
| **9.2** | **References** | 1. Gopal Chandra De. 1980., Fundamentals of Agronomy. Oxford and IBH Publishing Co. Ltd., Bangalore.<br>2. Hand book of Agriculture, ICAR Publication.<br>3. Palaniappan, S.P., Cropping Systems in the tropics – Principles and Practices. Willey Eastern Ltd., New Delhi.<br>4. Panda, S.C., 2006.Agronomy Agribios Publication, New Delhi.<br>**5. Reddy, S.R. Principles of Agronomy Kalyani Publishers, Ludhiana, India.**<br>6. Sankaran, S and Subbiah Mudliyar, V.T., 1991. Principles of Agronomy. The Bangalore Printing and Publishing Co. Ltd., Bangalore. |
| **9.3** | **Video References** | 1. |

| Outcome no. → Syllabus topic↓ | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Paper Code. Unit I (1) | ✓ | ✓ | | | ✓ |
| Paper Code. Unit I (2) | ✓ | ✓ | ✓ | | |
| Paper Code. Unit I (3) | ✓ | ✓ | ✓ | | ✓ |
| Paper Code. Unit I (4) | ✓ | ✓ | ✓ | ✓ | |
| Paper Code. Unit I (5) | | ✓ | ✓ | | |
| Paper Code. Unit II (1) | ✓ | ✓ | | ✓ | |
| Paper Code. Unit II(2) | ✓ | ✓ | ✓ | ✓ | |
| Paper Code. Unit II(3) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Paper Code. Unit II(4) | | ✓ | | | ✓ |
| Paper Code. Unit II(5) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Paper Code. Unit II(6) | ✓ | ✓ | ✓ | ✓ | |
| Paper Code. Unit III (1) | | ✓ | ✓ | | ✓ |
| Paper Code. Unit III (2) | ✓ | ✓ | ✓ | | ✓ |
| Paper Code. Unit III (3) | ✓ | ✓ | ✓ | | ✓ |
| Paper Code. Unit III (4) | ✓ | ✓ | ✓ | | ✓ |
| Paper Code. Unit IV (1) | ✓ | ✓ | | ✓ | |
| Paper Code. Unit IV (2) | ✓ | ✓ | | ✓ | |
| Paper Code. Unit IV (3) | ✓ | ✓ | ✓ | | ✓ |
| Paper Code. Unit IV (4) | ✓ | ✓ | ✓ | | ✓ |
| Paper Code. Unit IV (5) | ✓ | ✓ | ✓ | | |
| Paper Code. Unit IV (6) | ✓ | ✓ | ✓ | | ✓ |

## QUESTION BANK

### Section A

### UNIT-I

1. Define the following terms-
    a) Allelopathy
    b) Seed and sowing methods
    c) Plant ideotype
    d) Drip irrigation
    e) Crop water requirement
    f) Dry land farming
    g) Agronomy
    h) Tillage
    i) Irrigation
    j) Drainage
    k) Life saving irrigation
    l) Nutrient use efficiency
    m) Weed
    n) Seed Dormancy
    o) Puddling
    p) Top dressing of fertilizer
2. Define Agronomy and explain the scope of agronomy with examples.
3. Define tillage and explain objects of tillage?
4. Enlist various method of sowing and describe drilling method of sowing.
5. Define growth and development. Explain in brief about growth curve.
6. Enlist different methods of weed control and explain in detail about mechanical methods of weed control.
7. Define weed. Explain damages (Losses) caused by weed.
8. Enlist different methods of fertilizer application and explain about localized method of fertilizer application.
9. Write the factors affect of growth and development.
10. Write the definition of Agriculture and its branches.
11. Classification of crops nutrients and their deficiency symptoms.
12. Define agronomy. Write meaning and scope of agronomy.
13. Write about Modern concept of tillage and its merit & demerits.
14. Write the classification of herbicide with example.
15. Define and classify irrigation scheduling.
16. Differentiate cropping and farming system.
17. What do you mean by weed? Write in brief the characteristics of weed.
18. Define the term tillage. Give objects of tillage and effects on soil and crop growth?
19. How you classify herbicides?
20. Define plant ideotype and explain types of plant ideotype.
21. State and explain various methods of sowing.
22. What is seed? Explain in brief the objectives of seed treatment.
23. Define Tilth? Describe in detail the modern concept in respect of minimum tillage and zero tillage.
24. Define crop rotation? Discuss various principles and advantages of crop rotation.
25. Define the term manure and fertilizer. How will you classify the manures and fertilizers?
26. Give different method of harvesting and threshing with example.
27. Write the short Note on the following
    a) Integrated weed management
    b) Green manuring
    c) Nutrient use efficiency
    d) Water use efficiency
    e) Criteria of essentiality
    f) Characteristics of good quality seed
    g) Signs of maturity in sugarcane
    h) Zero tillage