

FUNDAMENTALS OF AGRICULTURE & CROP PRODUCTION TECHNOLOGY (IPCC)		Semester	III
Course Code	BAG302	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	3:0:2:0	SEE Marks	50
Total Hours of Pedagogy	40 hours Theory + 8-10 Lab slots	Total Marks	100
Credits	04	Exam Hours	3
Examination nature (SEE)	Theory		
Course objectives: <ul style="list-style-type: none">• Imparting knowledge on different crops, crop nutrition and growth• Describing crop-water relations in association to crop growth and development• Illustrating crop management, cropping pattern and weed management• Imparting the fundamentals of crop production technology of crops• Providing knowledge on the importance and practices followed in growing crops			
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">1. Adopt different types of teaching methods to develop the outcomes through PowerPoint presentations and Videodemonstrations or Simulations.2. Chalk and Talk method for Problem Solving.3. Arrange visits to show the live working models other than laboratory topics.4. Adopt collaborative (Group Learning) Learning in the class.5. Adopt Problem Based Learning (PBL), which fosters students Analytical skills and develops thinking skills such as evaluating, generalizing, and analysing information.6. Conduct Laboratory Demonstrations and Practical Experiments to enhance experiential skills.			
MODULE-1 <p>Agronomy, its definition, scope and role of Agronomist. Tillage-objectives of tillage, types of tillage, tillage implements and factors affecting tillage, Effect of tillage on soil and crop growth. Tillage: its definition, characteristics and ideal tillage, Modern concepts of tillage, minimum, zero and stubble mulch tillage, importance of puddling. Conventional tillage practices and their effects, modern tillage practices and their advantages;</p>			
MODULE-2 <p>Seed, its definition, characteristics of quality seed, seed treatment and its objectives. Seed dormancy, causes of seed dormancy and multiplication, stages of seed. Effect of plant population on growth and yield, Planting geometry viz., solid, paired and skipped row planting. Importance of manures and fertilizers and its classification. Methods and time of application of manures, fertilizers and green manuring. Nutrient use efficiency and factors affecting nutrient use efficiency. Scheduling of Irrigation and Fertilizers: Irrigation schedules for different crops in different soils and agro-climatic regions, fertigation, irrigation methods. Plant Protection Measures- Pesticides, types of weedicides and insecticides available to control different weed flora, pests and diseases and their mode of action.</p>			
MODULE-3 <p>Weeds, its definition, characteristics of weeds, merits and demerits of weeds, classification of weeds, meaning of crop weed competition and its period in different crops. Principles and methods of weed management viz., cultural, mechanical, chemical, biological weed control methods and integrated weed management. Classification of herbicides. Crop harvesting, signs of maturity in different field crops, Physiological and crop maturity, Method of harvesting.</p>			
MODULE-4 <p>Introduction: Concepts in crop production; geographical distribution of crops and cropping systems; economic importance. Crop Classification: Cereals, pulses, oilseeds, fiber crops, forage crops, medicinal and aromatic crops and horticultural crops.</p> <p>Cropping Systems for Major Agro-Ecological Regions: Detailed descriptions of rice based cropping</p>			

systems, sugarcane based cropping systems, cotton based cropping systems, pulses and oilseeds based cropping systems, their suitability in different agro-ecological regions. Crop rotation, its definition, principles and advantages of crop rotation.
MODULE-5
Modern Techniques of Raising Field and Horticultural Crops Techniques of nursery raising, method of planting, fertilization, irrigation scheduling, weed control, and other practices to optimize yield, economic evaluations. Crop Growth Assessment: Crop, growth parameters and their measurements.

PRACTICAL COMPONENT OF IPCC(May cover all / major modules)

Sl.NO	Experiments
1	Identification of crops, seeds, fertilizers, pesticides & Tillage implements
2	Effect of sowing depth on germination and seedling vigour
3	Study of yield contributing characters and yield estimation
4	Seed germination and viability test
5	Numerical exercises on fertilizer requirement
6	Plant Population and water requirement
7	Use of tillage implements (reversible plough, one way plough, harrow, leveller, seed drill)
8	Study of soil moisture measuring devices
9	Measurement of field capacity, bulk density and infiltration rate
10	Measurement of irrigation water
11	Study of crop varieties and agronomic experiments at experimental farm
12	Morphological description of Kharif season crops (rice).

Course outcomes (Course Skill Set):

At the end of the course, the student will be able to:

- Express knowledge gained on the principles of agronomy
- Recognize the various nutrients and their effects on plant health
- Plan irrigation measures for plant growth and development
- Manage weeds in a field
- Plan for sustainable agricultural production
- Apply scientific methods and tools in field preparation and for designing cropping
- Comprehend the fundamentals of crop production of cereals
- Decide on the crops, fertilizers and irrigation measures for production of pulses
- Plan for sustainable crop production of oilseeds
- Explain the techniques involved in crop production of fibre and forage crops
- Correlate parameters involved in crop cultivation and practices of crop cultivation

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) and for the SEE minimum passing mark is 35% of the maximum marks (18 out of 50 marks). A student shall be

deemed to have satisfied the academic requirements and earned the credits allotted to each subject/course if the student secures 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.

CIE for the theory component of the IPCC (maximum marks 50)

- IPCC means practical portion integrated with the theory of the course.
- CIE marks for the theory component are **25 marks** and that for the practical component is **25 marks**.
- 25 marks for the theory component are split into **15 marks** for two Internal Assessment Tests (Two Tests, each of 15 Marks with 01-hour duration, are to be conducted) and **10 marks** for other assessment methods mentioned in 22OB4.2. The first test at the end of 40-50% coverage of the syllabus and the second test after covering 85-90% of the syllabus.
- Scaled-down marks of the sum of two tests and other assessment methods will be CIE marks for the theory component of IPCC (that is for **25 marks**).
- The student has to secure 40% of 25 marks to qualify in the CIE of the theory component of IPCC.

CIE for the practical component of the IPCC

- **15 marks** for the conduction of the experiment and preparation of laboratory record, and **10 marks** for the test to be conducted after the completion of all the laboratory sessions.
- On completion of every experiment/program in the laboratory, the students shall be evaluated including viva-voce and marks shall be awarded on the same day.
- The CIE marks awarded in the case of the Practical component shall be based on the continuous evaluation of the laboratory report. Each experiment report can be evaluated for 10 marks. Marks of all experiments' write-ups are added and scaled down to **15 marks**.
- The laboratory test (**duration 02/03 hours**) after completion of all the experiments shall be conducted for 50 marks and scaled down to **10 marks**.
- Scaled-down marks of write-up evaluations and tests added will be CIE marks for the laboratory component of IPCC for **25 marks**.
- The student has to secure 40% of 25 marks to qualify in the CIE of the practical component of the IPCC.

SEE for IPCC

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

5. The question paper will have ten questions. Each question is set for 20 marks.
6. 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.
7. The students have to answer 5 full questions, selecting one full question from each module.
8. Marks scored by the student shall be proportionally scaled down to 50 Marks

The theory portion of the IPCC shall be for both CIE and SEE, whereas the practical portion will have a CIE component only. Questions mentioned in the SEE paper may include questions from the practical component.

Suggested Learning Resources:

Books

1. Crop production and field experimentation by V.G. Vaidya, K.R. Sahastrabudhe and V.S. Khuspe. ContinentalPrakashan, Vijaynagar, Pune.
2. Hand book of Agriculture, ICAR Publication.
3. Modern techniques of raising field crops by Chidda Singh. Oxford and IBH Publishing Co. Ltd., Bangalore.
4. Principles of Agronomy by Sankaran S. and V.T. SubbiahMudliyar, 1991. The Bangalore Printing and Publishing Co.Ltd., Bangalore.
5. Agronomy by S.C. Panda, 2006. Agribios Publication, New Delhi.
6. Crop Production and Management by Y.B. Moranchan. Oxford and IBH Publishing Co. Ltd., Bangalore.
7. Principles of Agronomy by S.R. Reddy, Kalyani Publishers, Ludhiana, India.
8. Principles of Crop Production by Martin J.H. and Leonard W.H. the Mac Million Company, New York – 1962.
9. Scientific Crop Production (Vol. I and II). Thakur C. Metropolitan Books Co. Pvt. Ltd., New Delhi.
10. Fundamentals of Agronomy. Gopal Chandra De. 1980. Oxford and IBH Publishing Co. Ltd., Bangalore
11. Singh, Chidda "Modem technique of raising of field crops". Oxford and IBH Publishing Company Pvt. Ltd., 1994.
12. Suresh Singh Tomar, YagyaDev Mishra and Shailendra Singh Kushah. 2018. Production Technology of Rabi Crops.Biotech books, New Delhi, India.
13. Rajendra Prasad. 2017. Textbook of field crops production, Volume 1 and 2 (Foodgrain crops & Commercial Crops).ICAR, India.
14. ingh, R.P., Reddy, P.S. and Kiresur, V.(eds.). "Efficient Management of Dryland Crops in India". Indian Society ofOilseed Research, DOR Rajendra Nagar, Hyderabad, 1997.
15. Joshi M. 2015. Textbook of Field Crops. Prentice Hall India Learning Private Limited, India.

Web links and Video Lectures (e-Resources):

<https://www.youtube.com/watch?v=AnnZFYXnlfw>

https://www.youtube.com/watch?v=8ulpy_GFLDk

<https://www.youtube.com/watch?v=NCp93xbSwWM>

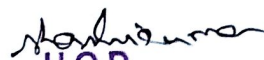
<https://www.youtube.com/watch?v=60qVUwLP1s8>

<https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg3-chapter8-1.pdf>

<https://ecourses.icar.gov.in/>

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- Quizzes
- Assignments
- Seminars
- Field Experiments
- Mini Projects


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