

**B.Sc., AGRICULTURE SEMESTER WISE SYLLABUS  
AND  
MODEL QUESTION PAPERS OF THEORY AND PRACTICALS  
(AS PER CBCS AND SEMESTER SYSTEM)**

Course: B. Sc.,

Subject: Agriculture

S. No.	Semester	Module Nature		Modules (Paper)	Hours/Week	Credits	Max. Marks (75+25)
2	2	CORE-2 Paper-2	Theory	Agronomy - II	04	04	100
			Practical	-do-	03	02	100/50
3	3	CORE-3 Paper-3	Theory	Fundamentals of Entomology	04	04	100
			Practical	-do-	03	02	40+10
4	4	CORE-4 Paper-4	Theory	Fundamentals of plant pathology	04	04	100
			Practical	-do-	03	02	40+10

**ACHARYA NAGARJUNA UNIVERSITY :: NAGARJUNA NAGAR – 522 510**  
**I B.Sc – AGRICULTURE SYLLABUS**  
**PAPER-II SEMESTER –II**  
**Paper-II T: Agronomy-II**  
**Total hours of teaching 60 hrs @ 4 hrs per week**

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**Part-II: AGRONOMY**

Unit – I	a. Soil fertility and nutrient management b. Chemical analysis of soil and water c. Maintenance of soil fertility and productivity a. Integrated nutrient management i. Organic methods ii. Chemical fertilizers	(12 hrs)
Unit – II	Breeding of field crops	(12 hrs)
Unit – III	Production of Millets Importance, origin, distribution, climate, variation, soil, practices, manuring, irrigation, Plant protection, harvesting and processing of the following crops:  a. Pearl millet / Bajra b. Finger millet / Ragi c. Foxtail millet / Korra d. Sorghum	(12 hrs)
Unit – IV	Production of oil seeds Importance, origin, distribution, climate, variation, soil, practices, manuring, irrigation, Plant protection, harvesting and processing of the following crops:  a. Ground nut b. Sunflower c. Castor d. Sesame e. Mustard	(12 hrs)
Unit – V	Production of Commercial crops Importance, origin, distribution, climate, variation, soil, practices, manuring, irrigation, Plant protection, harvesting and processing of the following crops:  a. Cotton b. Jute c. Sugarcane d. Tobacco e. Berseem f. Lucerne g. Para grass h. Napier grass	(12 hrs)

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**Total hours of teaching 45 hrs @ 3 hrs per week**

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**Practical Syllabus – II**

1. Chemical analysis of soil and water
  - a. Salinity / Alkalinity
  - b. pH and Electric conductivity
  - c. Nutrient analysis N, P, K, organic carbon
  
1. Identification and analysis of manures [Farm yard manure, Poultry manure, sheep penning].
  
2. Identification of chemical fertilizers based on physical properties.
  
3. Emasculation and pollination of naturally self / cross – pollinated local crops.
  
4. Hybrid seed production using male sterile lines, maintainer lines and restoral lines.
  
5. Identification of Millets, Oil seeds, commercial crops & fodder crops.

Field visits to observe the standing crops at Agriculture College and Research station in the vicinity [Darsi, Bapatla, Lam Farm, Jangamaheswarapuram and Amaravathi]

**II B. Sc – AGRICULTURE SYLLABUS THEORY**  
**PAPER –III; SEMESTER -III**  
**Paper-III T: Fundamentals of Entomology**  
**Total hours of teaching 60 hrs @ 4 hrs per week**

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**UNIT – I: Morphology & Classification of Insects**

- External Morphological Characters of Class Insecta.
- Classification of insect based on taxonomic character, types of mouth parts and economic importance
- Concept of pest, types of pest based on occurrence and nature of damage.
- Factors influencing abundance and distribution of insect pest.

**UNIT – II: Concept of Pest Management**

- Principles of insect pest management including concept and philosophy of integrated pest management (EIL and ETL).
- Tools of Integrated pest management (mechanical, cultural, physical, chemical, biological and legal methods).

**UNIT III: Pest Management- I House hold pests**

- Insecticide - definition, classification based on chemistry, mode of entry and mode of action
- Insecticide formulations- advantages, types of formulation.
- Advantages and disadvantages of insecticide- pest resistance, pest resurgence, pest outbreaks, pesticide residues and pollution.
- Principle of biological pest management- successes stories and limitations.

**UNIT – IV: Pest of Crops**

- Pest identification marks, nature, symptoms of damage and management of
  - Paddy Stem borer and BPH
  - Maize stem borer
  - Cotton bollworms and sucking pest
  - Pulses- Stem weevil, Aphids and pod borer
  - Vegetables- Tomato fruit borer, okra fruit borer, brinjal shoot & fruit borer, chilli fruit borer and sucking pest.
  - Fruits- Citrus butterfly, fruit flies, Mango stem borer, Ber fruit borer

**UNIT – V: Storage & Household Pest**

- Pest identification marks, nature and symptoms of damage and management of
  - Storage pest- Rice moth, Rice weevil, pulse beetle and flower beetles
  - Household pest- Mosquitoes, Houseflies, Ants, Cockroaches, Bed bugs, Head louse, wasps, crickets, termites.
- Plant and human diseases transmitting insects and management.
- Plant protection equipments & do, don't while spraying.

**II B. Sc – AGRICULTURE SYLLABUS PRACTICAL PAPER –III;  
SEMESTER –III Paper-III P: Fundamentals of Entomology  
Total hours of teaching 45 hrs @ 3 hrs per week**

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1. External morphology of Grasshopper (or) any locally available insect.
2. Collection and preservation of mature and immature insects.
3. Visit to IPM fields.
4. Collection of information on insecticides available in local market.
5. Visit to Rice, Maize fields and identification of insect pest symptoms of damage & practices followed by farmer.
6. Visit to vegetables growing area and identification of insect pest symptoms of damage & practice followed by farmer.
7. Visit mango garden (or) any fruit crop and identification of insect pest symptoms of damage & practice followed by farmer.
8. Collection of damaged fruits, vegetable and identification of causes of insect pest and management.
9. Collection of household pest and stored grain pest- identification of pest and management.
10. Study on working of plant protection equipment

**II B. Sc – AGRICULTURE SYLLABUS THEORY**  
**PAPER –IV; SEMESTER -IV**  
**Paper-IV T: FUNDAMENTALS OF PLANT PATHOLOGY**  
**Total hours of teaching 60 hrs @ 4 hrs per week**

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**UNIT – I. Types of plant pathogens**

1. Important plant pathogenic organisms- different groups- fungi, bacteria, fastidious vesicular bacteria, phytoplasmas, spiroplasmas, viruses, viroids, algae, protozoa and phanerogamic parasites with examples of diseases caused by them.
2. General Characters of fungi- Definition of fungus, somatic structures, types of fungal thalli, fungal tissues, modifications of thallus, reproduction in fungi (asexual and sexual).
3. Plant viruses-general characteristics and examples of plant diseases caused by viruses, viroids.

**UNIT – II Principles of Plant Pathology**

1. Terms and concepts in Plant Pathology. Survival and Dispersal of Plant Pathogens
2. Phenomenon of infection – pre-penetration, penetration and post penetration.
3. Pathogenesis – Role of enzymes, toxins, growth regulators and polysaccharides
4. Defense mechanism in plants – Structural and Bio-chemical (pre and post-infection).

**UNIT- III Plant disease epidemiology**

1. Meaning and importance, difference between simple and compound interest diseases – Factors affecting plant disease epidemics – host, pathogen, environment and time factor.
2. Plant Disease Forecasting – Meaning, advantages, methods in forecasting and examples.
3. Remote sensing – Meaning, scope, objectives, advantages.

**UNIT- IV Plant Disease Management**

1. General principles of plant diseases management – Importance, general Principles – Avoidance, exclusion, eradication, protection and therapy, immunization
2. Regulatory methods – Plant Quarantine and Inspection – Quarantine Rules and Regulations.
3. Cultural methods – Rouging, eradication of alternate and collateral hosts, crop rotation, manure and fertilizer management, mixed cropping, sanitation, hot weather ploughing, soil amendments, time of sowing, seed rate and plant density, irrigation and drainage.
4. Biological control and PGPR – Scope and importance – Role and mechanisms of biological control and PGPR with examples. Plant growth promoting rhizobacteria
5. Physical Methods – Heat treatments, soil solarization, hot water treatment, hot air treatment, control by refrigeration and radiation.
6. Chemical methods – study of different groups of fungicides, Methods of application of fungicides.

7. Integrated plant disease management (IDM) – Concept, advantages and importance.

**UNIT -V. Disease of field crops and their management**

1. Diseases of crops and their management –important disease in rice, sugarcane, cotton, tobacco, groundnut, pulses and major fruit and vegetable crops.

**II B. Sc – AGRICULTURE SYLLABUS Practical**  
**PAPER –IV; SEMESTER -IV**  
**Paper-IV P: Fundamentals of Plant Pathology**  
**Total hours of teaching 45 hrs @ 3 hrs per week**

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1. Field collection of plant pathogens
2. Temporary slide preparation of representative genera of disease causing fungi for Morphological studies
3. Isolation of phytopathogenic bacteria from locally available diseased plant material and study of colony characteristics and Grams -staining
4. Demonstration of mechanical transmission of plant viruses in green houses.
5. Study and identification of disease in the fields in major crops of the state
  - a) Paddy
  - b) Maize
  - c) Cotton
  - d) Chillies
  - e) Tobacco
  - f) Sugarcane
  - g) Mango
  - h) Banana
  - i) Citrus
  - j) Tomato
  - k) Brinjal
  - l) Pulses
  - m) Coconut and other
6. Preparation of PDA



