

नयाँ र संरचित

**NEW AND RESTRUCTURED
POST GRADUATE CURRICULA AND SYLLABUS
for
Entomology**

Dr. Rammanohar Lohia Avadh University, Ayodhya (U.P.)

M.Sc. (Ag.) Entomology

Third Semester

(Semester System as per ICAR 5th Dean Committee Recommendations)

w.e.f. 2020 - 2021

Submitted by :

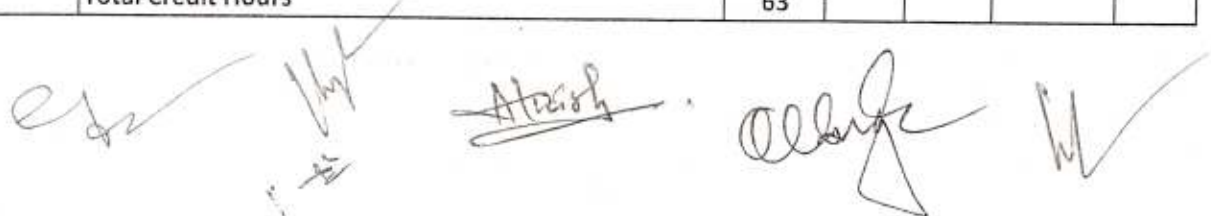
Dean & Conveners, Board of Studies

Faculty of Agriculture

Dr. Rammanohar Lohia Avadh University, Ayodhya (U.P.)

M.Sc. (Ag.) Entomology

Ist Semester			Evaluation Marks			
Code No.	Course Title	Credit Hours	Mid Term	End Term	Practical	Total
AE - 501	Insect Morphology	4(3+1)	20	50	30	100
AE - 502	Insect Systematic	3(2+1)	20	50	30	100
AE - 503	Insect Anatomy, Physiology and Nutrition	3(2+1)	20	50	30	100
AS - 501	Agricultural Statistics	3(2+1)	20	50	30	100
PGS - 501	Library and Information Services (Non gradial 50% marks required for satisfactory)	1(0+1)	-	-	100	100
Total Credit		14				
IInd Semester			Evaluation Marks			
Code No.	Course Title	Credit Hours	Mid Term	End Term	Practical	Total
AE - 504	Insect Ecology	3(2+1)	20	50	30	100
AE - 505	Toxicology Of Insecticides	3(2+1)	20	50	30	100
AE - 506	Plant Resistance To Insects	3(2+1)	20	50	30	100
PGS - 505	Agricultural research, research ethics and Rural development Programmes (Non gradial 50% marks required for satisfactory)	2(2+0)	40	60	-	100
PGS - 502	Technical Writing And Communications Skills (Non gradial 50% marks required for satisfactory)	1(0+1)	-	-	100	100
PGS - 503	Intellectual Property and Its Management In Agriculture (Non gradial 50% marks required for satisfactory)	1(1+0)	40	60	-	100
AE - 507	Integrated Insect Pest Management	3(2+1)	20	50	30	100
Total Credit		16				
IIIrd Semester			Evaluation Marks			
Code No.	Course Title	Credit Hours	Mid Term	End Term	Practical	Total
AE - 508	Advance Techniques In Plant Protection	3(2+1)	20	50	30	100
AE - 509	Biological Control	3(2+1)	20	50	30	100
AE - 510	Insect Vectors of Plant Viruses and other Pathogens	3(2+1)	20	50	30	100
CA - 502	Computer application in Agriculture	2(1+1)	20	50	30	100
PGS - 504	Basic Concepts In Laboratory Techniques (Non gradial 50% marks required for satisfactory)	1(0+1)	-	-	100	100
Total Credit		12				
IVth Semester			Evaluation Marks			
Code No.	Course Title	Credit Hours	Mid Term	End Term	Practical	Total
AE - 591	Master's Seminar	1(0+1)				100
AE - 599	Master Research (Thesis)	20	Satisfactory/Unsatisfactory			
OR						
Special Papers - (20 - Credit) Satisfactory/Unsatisfactory						
AE - 511	Principles of Insect Pest Management	4(3+1)	20	50	30	100
AE - 512	Biological Control of Crop Pests and Weeds	4(3+1)	20	50	30	100
AE - 513	Pests of Field Crops	4(3+1)	20	50	30	100
AE - 514	Pests of Horticultural and Plantation Crops	4(3+1)	20	50	30	100
AE - 515	Storage Pest and Their Management	4(3+1)	20	50	30	100
Total Credit		21				
Total Credit Hours		63				



M.Sc. (Ag.) ENTOMOLOGY

THIRD SEMESTER CURRICULA AND SYLLABUS

S. No.	Code No.	Title of the Course	Credit
1.	AE - 508	Advance Techniques In Plant Protection	3 (2+1)
2.	AE - 509	Biological Control	3 (2+1)
3.	AE - 510	Insect Vectors of Plant Viruses and other Pathogens	3 (2+1)
4.	CA 502	Computer Application in Agriculture	2 (1+1)
5.	PGS - 504	Basic Concepts In Laboratory Techniques (Non gradial 50% marks required for satisfactory)	1 (0+1)
Total Credit Hours			12

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M.Sc. (AG.)-ENTOMOLOGY IIIrd SEMESTER SYLLABUS

AE-508

ADVANCED TECHNIQUES IN PLANT PROTECTION

3(2+1)

THEORY : Pest control equipments, principles, operation, maintenance, selection, application of pesticides and biocontrol agents, seed dressing, soaking, root-dip treatment, dusting, spraying, application through irrigation water. Soil sterilization, solarization, deep ploughing, flooding, techniques to check the spread of pests through seed, bulbs, corms, cuttings and cut flowers. Use of light, transmission and scanning electron microscopy, Microscopy, Use of tissue culture techniques in plant protection. Computer application for predicting/forecasting pest attack and identification.

PRACTICAL : Identification and learning about various plant protection equipments and their parts, calibration of sprayers, seed dressing, soaking , root dip treatment , dusting , spraying (low and high volume sprayers) , solarization , microscopy.

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M.Sc. (AG)-ENTOMOLOGY IIIrd SEMESTER SYLLABUS

AE-509

BIOLOGICAL CONTROL

3(2+1)

THEORY :

UNIT I

History, principles and scope of biological control; important groups of parasitoids, predators and pathogens; principles of classical biological control- importation, augmentation and conservation.

UNIT II

Biology, adaptation, host seeking behaviour of predatory and parasitic groups of insects. Role of insect pathogenic nematodes, viruses, bacteria, fungi, protozoa etc., their mode of action. Biological control of weeds using insects.

UNIT III

Mass production of quality biocontrol agents- techniques, formulations, economics, field release/ application and evaluation.

UNIT IV

Successful biological control projects, analysis, trends and future possibilities of biological control. Importation of natural enemies- Quarantine regulations, biotechnology in biological control. Semiochemicals in biological control.

PRACTICAL : Identification of common natural enemies of crop pests (parasitoids, predators, microbes) and weed killers. Visits (only where logistically feasible) to bio-control laboratories to learn rearing and mass production of egg, egg-larval, larval, larval-pupal and pupal parasitoids, common predators, microbes and their laboratory hosts, phytophagous natural enemies of weeds. Field collection of parasitoids and predators. Hands-on training in culturing, identification of common insect pathogens. Quality control and registration standards for biocontrol agents.

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M.Sc. (AG)-ENTOMOLOGY IIIrd SEMESTER SYLLABUS

AE-510

INSECT VECTORS OF PLANT VIRUSES AND OTHER PATHOGENS

3(2+1)

THEORY :

UNIT I

History of developments in the area of insects as vectors of plant pathogens. Important insect vectors and their characteristics; mouth parts and feeding processes of important insect vectors. Efficiency of transmission.

UNIT II

Transmission of plant viruses and fungal pathogens. Relation between viruses and their vectors.

UNIT III

Transmission of plant viruses by aphids, whiteflies, mealy bugs and thrips.

UNIT IV

Transmission of mycoplasma and bacteria by leaf hoppers and plant hoppers.

UNIT V

Transmission of plant viruses by psyllids, beetles and mites. Epidemiology and management of insect transmitted diseases through vector management.

PRACTICAL : Identification of common vectors of plant pathogens- aphids, leafhoppers, whiteflies, thrips, beetles, nematodes; culturing and handling of vectors; demonstration of virus transmission through vectors- aphids, leafhoppers and whiteflies.

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M.Sc. (Ag.) ENTOMOLOGY - IIIrd Semester Syllabus

CA - 502

COMPUTER APPLICATION IN AGRICULTURE

2(1+1)

Theory :

Introduction to computer, operating system, definition and types, application of Ms-Office for document creation & Editing, Data presentation, interpretation and graph creation, statistical analysis, mathematical expressions, database concepts and types, uses of DBMS in Agriculture, World Wide Web (WWW); Memory, Basic Anatomy of Computer System. e-Agriculture concepts and applications, Use of ICT in Agriculture. IT Application for computation of water and nutrient requirement of crops, computer-controlled devices (automated system) for agri-input management, Smart phone Apps in Agriculture. Decision support systems, concepts, components and applications in agriculture.

Practical :

Study of computer components, accessories, practice of important DOS Commands. Introduction of different operating system such as window, Files & Folders, File Management. Use of MS-Word and MS Power-point for creating, editing and presenting a scientific document. MS-Excel - Creating a spreadsheet, use for statistical tools, writing expressions, creating graphs, analysis of scientific data. MS-Access - Creating database.

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M.Sc. (Ag.) ENTOMOLOGY

Third Semester Syllabus

PGS - 504

BASIC CONCEPTS IN LABORATORY TECHNIQUES

1(0+1)

Objective :

To acquaint the students about the basics of commonly used techniques in laboratory.

Practical :

Safety measures while in Lab; Handling of chemical substances; Use of burettes, pipettes, measuring cylinders, flasks, separatory funnel, condensers, micropipettes and vaccumets; washing, drying and sterilization of glassware; Drying of solvents/chemicals. Weighing and preparation of solutions of different strengths and their dilution; Handling techniques of solutions; Preparation of different agro-chemical doses in field and pot applications; Preparation of solutions of acids; Neutralisation of acid and bases; Preparation of buffers of different strengths and pH values. Use and handling of microscope, laminar flow, vacuum pumps, viscometer, thermometer, magnetic stirrer, micro-ovens, incubators, sandbath, waterbath, oilbath; Electric wiring and earthing. Preparation of media and methods of sterilization; Seed viability testing, testing of pollen viability; Tissue culture of crop plants; Description of flowering plants in botanical terms in relation to taxonomy

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