

M.Phil DEGREE PROGRAMME (REGULAR)

(For M.Phil Zoology)

With effect from 2014-2015

SYLLABUS

PAPER - I - RESEARCH METHODOLOGY

UNIT - I

MICROSCOPY: Principles, construction and biological uses of phase contrast, fluorescence, transmission and scanning electron microscopes.

UNIT - II

MICROTECHNIQUE: Principles of microtechnique-types of microtomes and their biological uses.

HISTOLOGY: Kinds of fixatives-characteristics of fixatives; dyes and their mode of action-pretreatment-mordants, staining; mounting of tissues-detailed schedule for making permanent slides of microtome sections.

HISTOCHEMISTRY: Histochemical tests for proteins, carbohydrates, lipids and nucleic acids-stains employed and staining procedure-chemical reactions involved.

UNIT - III

BIO-STATISTICS: Collection and classification of data-diagrammatic and graphic representation of data-measurement of central tendency- standard deviation - normal distribution-Test of significance based on large samples-small samples-student 't' test-correlation and regression-Chi square test for independence of attributes- ANOVA.

UNIT - IV

COMPUTER: Classification of computers-Input and output devices-compiler, assembler and interpreter-source and object programmes-Flow chart-software packages used for statistics- MS Power Points-use of computers in preparation of graphs, chart, histogram. Major search engines-web browsing-major web sites for journals and scientific information

UNIT - V

SCIENTIFIC WRITING: Choosing the problem for research-sources of information-collection from journals and periodicals-abstraction and preparation of index cards-methods of editing and abstracting-preparation of scientific manuscript-thesis writing-proof correction.

REFERENCES:

1. Dr.N.Gurumani 2006 Research Methodology MJP Publishers, Chennai
2. Palanisamy.S and M.Shanmugavelu, 1997. Research methods in Biological Sciences. Palani Paramount Publications, Tamilnadu, India
3. Jeyaraman.J, 1988. Laboratory manual in Biochemistry. Willey Eastern Ltd.Madras
4. Gurr.E, 1958. Methods of Analytical Histology and Histo-chemistry. Leonard Hill Ltd., London
5. Regupathy.A and K.P.Dhamu. Statistical work book for insecticide toxicology. Suriya Desktop Publishers, TNAU, Tamilnadu.
6. Plummer.D.T, 1988. An Introduction to Practical Biochemistry. 3rd Ed., Tata Mc-Graw-Hill Publishing Co., Ltd., New Delhi.
7. Prakash.M and C.K.Arora, 1998. Biochemical Technique. Ammol Publications Pvt.Ltd., New Delhi.
8. Oster.G and A.W.Pollistol, 1956. Physical Techniques in Biological Research, Vol. III. Academic Press,Inc., New York
9. Hayat.M.A, 1986. Basic Techniques for Transmission Electron Microscopy, Academic press, New York.
10. Gupta.P.K , 2000. Methods in environmental analysis-Water, Soil and air. Agrobios Pub. New Delhi
11. Krishnamurthy.R, 1994. Computer Programming and application. J.J. Publications, Madurai.
12. Day.R.A, 1994. How to write and publish a scientific paper. Cambridge University Press, London.
13. Comor and Peter Wood Ford, 1979. Writing Scientific Papers in English. Pitman Medical Publishing co., London.

PAPER - II - ADVANCES IN ZOOLOGY AND TECHNIQUES
(For M.Phil Zoology)

UNIT - I

SEPERATION TECHNIQUES:

ELECTROPHORESIS: Principles, methods and application of Paper , cellulose and Immuno - electrophoresis-gel electrophoresis, agar electrophoresis.

CHROMATOGRAPHY: Principles of chromatography-Paper chromatography- Thin layer chromatography, Gas chromatography, Gas liquid chromatography- High performance liquid chromatography, Ion-exchange chromatography.

CENTRIFUGE: Working principles-ultra centrifuge-refrigerated centrifuge.

UNIT - II

COLORIMETRY: Principles and application of colorimeters-spectrophotometer-flame photometer-U.V. Spectrophotometer, Atomic Absorption Spectrophotometer and G.M.Counters.

pH METERS: Glass electrode, calomel electrode-construction and working principles-types of pH meters.

MONOMETRY: Types of monometers - Warburg monometer-biological use of monometers.

UNIT-III

ENDOCRINOLOGY: Organisation of the neuroendocrine system in insects, crustacean and mammals-chemistry of hormones-steroids and steroidogenesis-endocrine regulation of metamorphosis in insects-role of hormones in insect reproduction.

UNIT-IV

IMMUNOLOGY: Immune system-nature of immunity-antigen and antibody reaction; development of immune system-immunosuppression-potency of nucleus in developing systems-totipotency, determination and differentiation-cell interaction-cell transformation. Tissue and organ culture techniques-basic requirement-applications in biological studies.

UNIT-V

TOXICOLOGY: Pesticides and insecticides - classification - determination of LC₅₀ and LD₅₀ - effect of pesticides on insects and fishes with reference to digestive and reproductive system - hazards of environmental pollution and measures of conservation.

BIOTECHNOLOGY & IPR: Application of biotechnology for agriculture, medicine and environment- Intellectual Property Rights, (IPR) Patent, Trade marks and Copy Rights.

Reference:

- 1.Khan.I.A & A.Khanum, 1994. Fundamentals of Biostatistics. Ukaaz Publications, Hydrebad, India
- 2.Joshi.K.R and N.O.Osama. Immunology 4th revised Ed., Agrobotanical publishers, Daryaganj, New Delhi
- 3.Pastoret,P.P, P.Griebed, H.Baxin, A.Govaerts, 1998. Handbooks of Vertebrate Immunology, Academic Press, London
- 4.Sharma.P.D, 1996. Environmental Biology and Toxicology, Rastogi Publications Meerut, India
- 5.Lu, F.C. 1985 Basic Toxicology. Hemisphere, Pub.Corp.Washington, New York, London
- 6.Temphere,D.B, 1984. A Text book of Insect Morphology, physiology and endocrinology. S.Chand and Co., New Delhi.
- 7.Vasantharaj David.B, 1988. Elements of Economics Entomology. Popular Book Dept, Saidapet, Chennai.
- 8.Turner,C.D, 1966. General Endocrinology 4th ed., W.B.Saunders Co., London.
- 9.Barrington,E.J.W., 1975. An Introduction to General and Comparative Endocrinology. Academic Press, London.