| **Course Title:** Genetics & Molecular Biology Practical (General/Non-thesis Group) | | |
|---|---|---|
| **Course Code:** Zool.MP.636 | **Course Type:** Practical (Core Course, Mandatory) | **Credits:** 6 |
| **Full Marks:** 150 | **Total Lecture hours:** 90 | **Exam Hours:** 24 (6 hours daily) |

**Course Learning Objectives**

To provide practical experience on the topics covered by theoretical courses from Zool.M.631 to Zool.M.635 so that the graduate students can apply their knowledge in the laboratory, workplace as well as in practical life.

**Course Learning Outcomes (CLOs)**

After completion of this practical course, learners will be able to: (Tutor names in parentheses)

1. Estimate and analyze of quantitative trait like sternopleural bristles in *Drosophila* (MSI)
2. Calculate co-efficient of correlation for quantitative traits in *Bombyx mori* cocoons (MSI)
3. Estimate and analyze heterosis for cocoon weights in *Bombyx mori* (RL)
4. Study and demonstrate the sex-linked inheritance in *Drosophila* (RL)
5. Prepare and study giant chromosomes from the salivary glands of Diptera (MAR)
6. Study and estimate the effects of mutagens and/or aging on *Drosophila* (MAR)
7. Extract and demonstrate plasmid DNA from *Escherichia coli* by gel electrophoresis (FHQ)
8. Separate and identify amino acids by paper chromatography (FHQ)
9. Identify different stages of meiosis from grasshopper testes (SMK)
10. Study and identify various *Drosophila* mutants and human karyotypes (SMK)
11. Study and demonstrate culture methods, isolation and purification of bacteria (MKM)
12. Describe procedures and interpret antibiotic sensitivity tests for bacteria (MKM)

**Course contents, teaching strategies and alignment of topic with CLOs**

| **Contents** | **Alignment of topic with CLOs** | **LH** |
|---|---|---|
| Estimation and analysis of quantitative trait like sternopleural bristles in *Drosophila* (MSI) | CLO 1 | 6 |
| Calculation and interpretation of co-efficient of correlation for quantitative traits in *Bombyx mori* cocoons (MSI) | CLO 2 | 8 |
| Estimation and analysis of heterosis for cocoon weights in *Bombyx mori* (RL) | CLO 3 | 6 |
| Study and demonstration of the sex-linked inheritance in *Drosophila* (RL) | CLO 4 | 8 |
| Preparation and study of giant chromosomes from the salivary glands of Diptera (MAR) | CLO 5 | 6 |
| Study and estimation of the effects of mutagens and/or aging on *Drosophila* (MAR) | CLO 6 | 8 |
| Extraction and demonstration of plasmid DNA from *Escherichia coli* by gel electrophoresis (FHQ) | CLO 7 | 8 |
| Separation and identification of amino acids by paper chromatography (FHQ) | CLO 8 | 6 |
| Identification of different stages of meiosis from grasshopper testes (SMK) | CLO 9 | 6 |
| Study and identification of *Drosophila* mutants and human karyotypes (SMK) | CLO 10 | 8 |
| Study and demonstration of culture methods, isolation and purification of bacteria (MKM) | CLO 11 | 10 |
| Description of procedures and interpretation of antibiotic sensitivity tests for bacteria (MKM) | CLO 12 | 10 |

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| **Class/Lab notebooks:** Classroom preparations and class records.<br><br>**Assessment Strategy** | | |
| **Type of Assessment** | **Marks** | **Methods of Assessment** |
| Practical Examination | 120 | 24-hrs practical exam on the above topics (6 hrs daily) |
| Continuous Lab Assessment | | |
| | 15 | Laboratory attendance |
| | 15 | Practical class records |

**Learning Resources**


Alcamo, I.E. : Fundamentals of Microbiology
Ananthanarayan, R. & Paniker, J.C.K:Text book of Microbiology
Auerbach, C. : Mutation Research
Ayala, F.J & Kiger, Jr. : Modern Genetics
Benstey, R.R. : Hand book of histological and cytological techniques
Burns, G.W. : The Science of Genetics
Carpenter, P.Z. : Microbiology
Chowdhury, M.R. : Modern Medical Microbiology
Darke, J.W. : The molecular basis of mutation
Darlington, C.D. & Lacour, L.F. : The handling of chromosomes
Desmond, S.T.N. : An Introduction to genetic Engineering
Dupraw, T.E.J. : DNA and chromosome
Falconer, D.S. : Introduction of quantitative Genetics
Frobisher, M. : Fundamentals of Microbiology
Islam, M.S. : Selected Lectures on Genetics
Jay, J.M. : Modern Food Microbiology
Kingsman, S.M. & Kingsman, A.J.: Genetic Engineering.
Klung, S.W. & Cummings, R.M. : Essentials of Genetics
Kumar, S.D. : Molecular Biology and Biotechnology
Meynell, G.E. : Bacterial plasmid.
Novitski, E. : Human genetics
Prave, P. *et al*. : Basic Biotechnology.
Rashid, K.M. *et al.* : Text book of community medicine and public health.
Scaife, J. *et al.* : Genetics of bacteria
Schiegel, H.G. : General Microbiology.
Smith, J.B. : Biotechnology Principles.
Strickberger, M.W. : Genetics
Swanson, C.P. : The Cell Structure.
Walker, J.M. & Gingold, E.B. : Molecular Biology and Biotechnology
Watson, J.D.*et al.* : Recombinant of Gene Cloning
Watson, J.D. *et al.* : Modern Biology of the Gene
Watson, J.D. *et al.* : Molecular Biology of the Gene.
Watson, J.D. : The molecular biology of the gene
Winchester, A.M. : Genetics.
ইসলাম, এম.সা. ও অন্যান্য (২০১৭) : জেনেটিক্স: মিল ও অমিলের বিজ্ঞান
খান, হা.সা.ও ইসলাম, এম.সা. (২০১১): জৈবপ্রযুক্তি এবং জীন প্রকৌশল


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