**Core Course**

## LS 452—MOLECULAR BIOLOGY [3 credits]

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| S No | Topic | Faculty | Contact Hours |
|---|---|---|---|
| 1. | Introduction | PCR | 2 |
| 2. | DNA and RNA: Structure and Conformation | PCR | 3 |
| 3. | Denaturation and Renaturation of DNA | PCR | 2 |
| 4. | DNA Replication: Replicon model; Replication origin; Replication Origin identification; Mapping of Origins | KN | 2 |
| 5. | Enzymology and Mechanism of DNA replication | KN | 2 |
| 6. | Regulation of DNA replication- Prokaryotes and Eukaryotes | KN | 1 |
| 7. | Telomere replication; Telomerase | KN | 1 |
| 8. | Chromatin Structure and Organization | PKV | 3 |
| 9. | Structural Organization of Genes and Genomes | PKV | 2 |
| 10. | Chromatin assembly after chromosome Replication | KN | 1 |
| 11. | Transposable elements | PKV | 2 |
| 12. | Transcription | KN | 3 |
| 13. | Mutation and DNA Repair | PKV | 3 |
| 14. | DNA recombination | PCR | 2 |
| 15. | RNA Replication and “RNA world” | PCR | 2 |
| 16. | Types of RNA and RNA Processing | PCR | 3 |
| 17. | Genetic Code and Translation | PCR | 4 |
| 18. | Regulation of Prokaryotic Gene Expression | KN | 3 |
| 19. | Regulation of Eukaryotic Transcription; RNA processing | KN | 3 |
| 20. | Epigenetics and Epigenome | KN | 2 |
| 21. | RNA Interference and Gene Silencing, | | 2 |

**Suggested reading:**

1. Molecular Biology of the Gene (Watson et al) 6th Edn,
2. Molecular Cellular Biology (Lodish et al) 6th edn,
3. Molecular Biology of the Cell(Alberts et al) 5th Edn., etc.