

Lesson Plan (2018) Dr. Pawan Kumar

B.Sc. (Hons) Zoology SEMESTER – V Genetics and Genomics -1

July ,2018

Week 3 (July 16-21)

Unit I- Introduction to Genetic Mendel' s work on transmission of traits,

Week 4 (July 23-28)

Genetic Variation, Molecular basis of Genetic Information.

August ,2018

Week 1 (July 30-August 4)

Mitosis and Meiosis

Interrelation between the cell structure and the genetics function, Mitosis, Meiosis (explaining Mendel' s ratios)

Week 2(August 6-11)

Mendelian Genetics and its Extension Principles of Inheritance, Chromosome theory of inheritance, Laws of Probability, Pedigree analysis, Incomplete and codominance,

Week 3 (August 13-18)

Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, Environmental effects on phenotypic expression, sex linked inheritance.

Week 4 (August 20-25).

Unit II

Linkage, Crossing Over and Chromosomal Mapping Linkage and crossing over,

Week 5 (August 26-Sep 1).

Cytological basis of crossing over, Molecular mechanism of crossing over,

September ,2018

Week 1 (September 3-8)

Unit-II Recombination frequency as a measure of linkage intensity, two factor and three factor crosses, Interference and coincidence,

Week 2 (September 10-15)

Somatic cell genetics - an alternative approach to gene mapping. Introduction to concept of Epigenetics.

Week 3 (September 17-22)

Unit-III Mutations Chromosomal Mutations: Deletion, Duplication, Inversion,

Week 4 (September 24-29)

Translocation, Aneuploidy and Polyploidy. Gene mutations: Induced versus Spontaneous mutations, Back versus Suppressor mutations,

October-2018

Week 1(October 1-6)

Molecular basis of Mutations
in relation to UV light and chemical mutagens, Detection of mutations:

Week 2(October 8-13)

CLB method, Attached X method, DNA repair mechanisms.

Sex Determination

Chromosomal mechanisms, Environmental factors determining sex determination,

Week 3(October 15-20)

Barr bodies, Dosage compensation. **Extrachromosomal Inheritance**
Chloroplast mutation/Variation in Four o' clock plant and *Chlymodomonas*,

Week 4 October 22-27)

November -2018

Week 1(October 29- November 3)

Mitochondrial mutations in *Neurospora* and yeast,

Week 2 (November 5-10)

Maternal effects, Infective heredity- Kappa particles in *Paramecium*.

Week 3 (November 12-17)

Quantitative Genetics

Quantitative and multifactor inheritance, Transgressive variations, Heterosis.

Week 4 and 5 (November 19-24, 26-30)

Revision and Test

July 2018

Week 3 (July 16-21)

Unit I: Carbohydrates: Structures and properties of important mono-, di- and polysaccharides.

Week 4 (July 23-28)

Structures and properties di- and polysaccharides.

August, 2018

Week 1 (July 30-August 4)

Carbohydrate Metabolism Glycolysis, Fermentation, Citric acid cycle,

Week 2(August 6-11)

pentose phosphate pathway, Gluconeogenesis, Shuttle systems (Malateaspartate shuttle,

Week 3 (August 13-18)

Glycerol 3-phosphate shuttle, and Cori cycle), Glycogen metabolism.

Week 4 (August 20-25).

Structures, properties and functional significance of fatty acids,

Week 5 (August 26-Sep 1).

triglycerides and steroids.

September-2018

Week 1 (September 3-8)

Lipid Metabolism Biosynthesis and β -oxidation of saturated fatty acids, Ketogenesis,

Week 2 (September 10-15)

Amino acids and Proteins Structure and general properties of amino acids.

Week 3 (September 17-22)

Protein Metabolism Catabolism of amino acids: Transamination,

Week 4 (September 24-29)

Deamination and Urea cycle,

October -2018

Week 1(October 1-6)

Fate of glucogenic and ketogenic amino acids with examples of serine and leucine respectively.

Week 2(October 8-13)

Enzymes Introduction, kinetics

Week 3(October 15-20)

, mechanism of action,

Week 4(October 22-27)

inhibition, allosteric enzymes.

November-2018

Week 1(October 29- November 3)

Intermediary metabolism

Inter-relationship of carbohydrates,

Week 2 (November 5-10)

lipid and protein metabolism.

Week 3 (November 12-17)

Oxidative Phosphorylation

Oxidative phosphorylation in mitochondria,

Week 4 (November 19-24)

Respiratory chain,

Week 5 (November 26-30)

ATP synthase, Inhibitors and Uncouplers

Lesson Plan (2018) Dr. Pawan Kumar

B.Sc. (Hons) Zoology SEMESTER – V PAPER-505 Biostatistics

Jyly ,2018
Week 3 (July 16-21)

Unit-III – Measures of central tendency.
Week 4 (July 23-28)

Measures of dispersion;

August,2018

Week 1 (July 30-August 4)

Unit-III skewness, .

Week 2(August 6-11)
kurtosis

Week 3 (August 13-18)

. Elementary Probability and basic laws,

Week 4 (August 20-25).
Discrete and Continuous Random variable

Week 5 (August 26-Sep 1).

Mathematical Expectation

September ,2018

Week 1 (September 3-8)

Unit- III –, Mean and Variance of Binomial,

Week 2 (September 10-15)

Poisson and

Week 3 (September 17-22)

Normal distribution

Week 4 (September 24-29)

Sample mean and Sampling variance

October-2018

Week 1(October 1-6)

Hypothesis testing using standard normal variate.

Week 2(October 8-13)

Curve Fitting.

Week 3(October 15-20)

Correlation

Week 4(October 22-27)

Regression.

November-2018

Week 1(October 29- November 3)

Examples of Biostat test

Week 2 (November 5-10)

Examples of Biostat test

Week 3 (November 12-17)

Examples of Biostat test

Week 4 (November 19-24)

Test

Week 5 (November 26-30)

Test