

“Genetic Diseases”

Session 2020-2021



Faculty of Science



Courses Offered by:

Department of Zoology

Genetic Diseases (VAC-Z-004)

This course provides the genetic basis of human disease. Students begin by studying diseases that are inherited in a Mendelian fashion, such as sickle cell disease and cystic fibrosis. The idea of complex trait inheritance is then introduced through examples of diseases with more complex and mixed inheritance patterns. Students study complex genetic traits and diseases such as Type II diabetes, schizophrenia, obesity, and asthma and examine results from the recent genome-wide association studies that have expanded our understanding of human disease architecture. The course concludes with a discussion of the potential for personalized medicine as well as personal genomics. The course has a heavy emphasis on the scientific literature.

man Inheritance and Genetic Disorder



Course Outcome

- Explain the different types of inheritance patterns of human disease.
- Compare and contrast Mendelian and complex inheritance patterns.
- Interpret and analyze data from the scientific literature on human genetic disease. Understand the current state of the art in genomics and explain current controversies in the field.

Value Added Course Name-	VAC-Z-004
Genetic Diseases	

Objectives – To get the detail knowledge of Genetic Diseases on Human system.

UNIT- 1. Mendelian principles - Dominance, segregation, independent assortment, deviations from Mendelian inheritance. b. Methods of gene transfer- Transformation, Conjugation, transduction, bacteriophages types, structure and morphology of T, Phage. 08 hrs

UNIT- 2. Chromosomes- Structural and numerical alterations of chromosomes, Molecular anatomy of eukaryotic, heterochromatin and euchromatin, giant chromosomes, polytene and lambrush chromosomes, sex chromosomes. b. Gene-Mapping Concept of recombination, linkage map., cytogenetic map. physical maps, molecular maps, levels of genome mapping significance of genome mapping. 08 hrs

UNIT 3. Population genetics- Gene pool and gene frequencies, Hardy-Weinberg law of genetic equilibrium and changes in gene frequencies. b. Somatic cell genetics- cell fusion and hybrid agents and mechanism of fusion, heterokaryon 03 hrs

UNIT-4. Genetic Techniques- Cloning. PCR, DNA, sequencing FISH, GISH, DNA-fingerprinting. chromosome walking and application of genetic engineering. b. Genetic code- Properties of genetic code, codon assignment, chain initiation and termination, mutations and the genetic code.

Recommended Textbooks

The following textbooks are suggested as references, but are not required. Reading assignments for the course will be drawn from primary literature, review articles, and readings from the popular press.

Human Genetics and Genomics, 4th Edition – Bruce Korf and Mira Irons (ISBN-13: 978-0470654477)

Human Molecular Genetics, 4th Edition – Tom Strachan and Andrew Read (ISBN-13: 978-0815341499)

*1st Year
1st Sem
Zoology*


Registrar
Swami Vivekanand
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Report on
Value Added Course 2020-2021

A value added course on “Genetic Diseases” was conducted in Zoology department for Final year students, For 16 hours duration course. The course starts on 02-04-2021 by online mode. The session was handled by Drs. Vinay Panwar, Neeru Singh of Zoology. On that session, students learnt what the genetic diseases are and how it can affect human and animal life. Students felt that this value added session on “Genetic Diseases” was very much informative and useful for them and they got the basic idea for developing their knowledge about how to prevent effectively by the awareness and genetic counseling. It is planned to extend this value added training in the next coming session 2021-2022 with some more refined, advanced and practical knowledge about Genetic diseases and other.

Prof. (Dr) Vinay Panwar
HOD, Zoology

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Department of Zoology
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SWAMI VIVEKANAND SUBHARTI UNIVERSITY

(Established under U.P. Govt. Act no. 29 of 2008 and approved under section 2(I) of UGC Act 1956)
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Dated: 01/05/2021

Value Added Course-2020-2021
Genetic Diseases

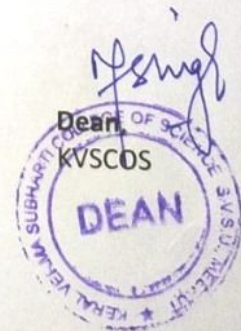
List of Students

S. No.	Name of the Student
1.	Nandini Chaudhary
2.	Hiroshima Akoijam
3.	Mausmi Sarkar
4.	Nishi Tomar
5.	Himanshu
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HoD, Zoology

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Students doing practical during VAC: Genetic Disease