DEPARTMENT OF BIORESOURCES
School of Biological Sciences
UNIVERSITY OF KASHMIR, SRINAGAR
NAAC Accredited Grade A+ University
(Head)

No. F(Exp-Dr Manzoor/Prom)BRES/KU/25
Dated: 01-07-2025

To Whom It May Concern

This is to certify that Dr, Manzoor Ahmad Mir, Associate Professor, Department of Bioresources has been involved in the development of CORE/DCE/GE/OE courses from 2022 to 2025 (during assessment period) in the Department of Bioresources and has been actively involved in teaching these courses mentioned below:

S. No	Type	Title of the Content	Role	Course Credit	ReleaseDate
1	Design_Curricula_Course	Fundementals of Bioresources Core Course (Core Course)	Designed & Developed Syllabus of Core course of Fundamentals Of Bioresources for UG as per NEP-2020	6	01-04-2023
2	Design_Curricula_Course	Animal Resource (Core Course)	Designed & Developed Syllabus of Core course of Animal Resource for UG as per NEP-2020	6	01-04-2023
3	Design_Curricula_Course	Microbial Resource (Core Course)	Designed & Developed Syllabus of Core course of Microbial Resource for UG as per NEP-2020	6	01-04-2023
4	Design_Curricula_Course	Biostatistics and Biotechniques (Dicipline Centric Course)	Designed & Developed Syllabus of DCE course Biostatistics & Biotechniques for UG as per NEP-2020	6	01-04-2023
5	Design_Curricula_Course	Bioresources Technology (Dicipline Centric Course)	Designed & Developed Syllabus of DCE course Bioresources Technology for UG as per NEP-2020	6	01-04-2023
6	Design_Curricula_Course	Applied Entomology (Skill Enhanced Course)	Designed & Developed Syllabus of SEC course Applied Entomology for UG as per NEP-2020	4	01-04-2023
7	Design_Curricula_Course	Fish Farming (Skill Enhanced Course)	Designed & Developed Syllabus of SEC course Fish Farming for UG as per NEP-2020	4	01-04-2023
8	Design_Curricula_Course	Dairy Farming (Skill Enhanced Course)	Designed & Developed Syllabus of SEC course Dairy Farming for UG as per NEP-2020	4	01-04-2023
9	Design_Curricula_Course	Poultry Farming (Skill Enhanced Course)	Designed & Developed Syllabus of SEC course Poultry Farming for UG as per NEP-2020	4	01-04-2023
10	Design_Curricula_Course	Ph. D Course Work Syllabus	Revised the Ph. D Course Work Syllabus	12	01-04-2023
11	Design_Curricula_Course	Ph D Entrance Syllabus	Revised the Ph. D Entrance Syllabus	6	30-04-2023
12	Design_Curricula_Course	PG Entrance Syllabus	Revised the PG Entrance Syllabus	6	01-04-2024
13	Design_Curricula_Course	PG Syllabus as per NEP-2020	Revised P.G syllabus of Bioresources & included programme outcomes & learning objectives/outcomes	96	01-04-2024
14	Design_Curricula_Course	Bioindustries (Dicipline Centric Course)	Designed & Developed Syllabus of DCE course of Bioindustries for UG as per NEP-2020	6	04-07-2024

Head
Department of Bioresources

HEAD
Deptt. of Bioresources
University of Kashmir

Endocrinology

By Dr Manzoor Ahmad Mir | School of Biological Sciences, University of Kashmir

Learners enrolled: 2448

ENDOCRINOLOGYMOOC INTRODUCTORY VIDEO

The course "Endocrinology" is a Discipline Specific Elective Course in B.Sc. Zoology under the Choice Based Credit System (CBCS). The course is specially designed to improve the understanding of students about different dimensions of endocrinology starting from glands of the body, hormones secreted by endocrine glands, structure of glands and their different functions, signal transduction, different types of pathways of hormonal regulation and hormones in homeostasis.

Endocrinology i[illegible]urse in Zoology as any disturbance in hormonal balance results in a disease in humans or in other animals. [illegible] give students an insight into the endocrine system and will teach them about various syndromes and diseases associated with it. It will be a mass awareness educational module for the benefit of the society. Moreover our R[illegible] Endocrine system. We have an ideal team with all professional and academic skills required to make this course on Endocrinology.

Summary

Course Status :	Completed
Course Type :	Elective
Language for course content :	English
Duration :	12 weeks
Category :	◦ Biological Sciences & Bioengineering
Credit Points :	4
Level :	Undergraduate
Start Date :	14 Sep 2020
End Date :	28 Nov 2020
Enrollment Ends :	14 Oct 2020
Exam Date :	

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(https://www.addtoany.com/share#url=https%3A%2F%2Fonlinecourses.swayam2.ac.in%2Fcec20_bt21%2Fpreview&title=Endocrinology%20-%20Course)

Course layout

Week 1 :
History of endocrinology (Day-1)

Classification of
Characteristics (Day-3)
Transport of Peptide Hormones in Blood (Day-4)

Week 2 :
Transport of Steroid Hormones in Blood (Day-1)
Mechanisms of Steroid Hormone Action (Day2)
Mechanisms of protein hormone Action (Day-3)
Metabolism and excretion of Hormones (Day-4)

Week 3 :
The Secondary Messenger Concept (Day-1)
Neurosecretions and Neurohormones (Day2)
Pineal gland, structure, secretions and Functions (Day-3)
Pineal gland in biological rhythms and reproduction (Day-4)

Week 4 :
Hypothalamus, structure and secretions (Day-1)
Hypothalamic nucleic and their functions (Day2)
Regulation of neuroendocrine glands (Day-3)
Feedback mechanisms of Hormonal regulation (Day-4)

Week 5 :
Structure and secretions of Pituitary gland (Day-1)
Functions of pituitary hormones (Day2)
Hypothlamo-hypophysial portal system (Day-3)
Disorders of pituitary gland (Day-4)

Week 6 :
Thyroid gland: Structure, Synthesis and transport of thyroid Hormones (Day-1)
Functions and Mechanism of Action of Thyroid Hormones (Day2)
Regulation and disorders of thyroid gland (Day-3)
Parathyroid gland: structure, Functions, regulation and Disorders (Day-4)

Week 7 :
Adrenal gland structure, secretions and functions (Day-1)
Regulation and disorders of adrenal gland (Day2)
Pancreas- structure, hormones and functions (Day-3)
Regulation and disorders of pancreas (Day-4)

Week 8 :

Ovary-structure, l ns and regulation (Day-1)
Testis- structure, ne and regulation (Day-2)
Endocrine Disorders Related to Reproduction (Day-3)
Hormones in homeostasis (Day-4)

Week 9 :
Disorders of endocrine glands (Day-1)
Disorders of the Hypothalamus, Pineal Gland (Day2)
Hormonal action at cellular level- hormone receptors (Day-3)
General Organization of Bio regulatory Systems (Day-4)

Week 10 :
Signal transduction through hormones (Day-1)
Hormonal regulation at cellular level (Day2)
Hormonal action at cellular level- hormone receptors (Day-3)
Molecular mediators of hormonal action (Day-4)

Week 11 :
Genetic control of hormonal action (Day-1)
Pancreatic Cancer (Day-2)

Books and references

Lary Jameson J, 2017 Harrisons Endocrinology, McGraw Hill Publishers 4th Edition 2017.
Norman Levin, 2019 Mannual of Endocrinology and Metabolism 5th Edition, Wolters Kluwer Publishers 2019
Ulloa-Aguirre A, Michael Conn P 2014 Cellular Endocrinology in Health and Disease-Academic Press Elsevier USA (2014)
Bernhard K, Winfried B, 2016, Hormones and the Endocrine System: A text Book, Springer Nature Publishers 2016
Fox T, Brooke A, Vaidya B, 2015, Endocrinology JP Medical Publishers
5th Edition 2015
Luciano M, 2004 Encyclopedia of Endocrine Diseases, Elsevier Publishers USA, Volume-1 2004
Amritava G, Saurabha B, Sarita B and Sujoy G. 2019 MCQs in Endocrinology for DM Entrance Examination Paperback JP Publishers (First Edition) 2019
Antonio B, Derek L 2018, Principles of Endocrinology and Hormone action, Springer International Publishing AG 2018

Instructor bio

Dr Manzoor Ahmad Mir

School Of Biological Sciences, University Of Kashmir

)r. Manzoor Ahmad Mir Sr. Assistant Professor, Department of Bioresources, University of Kashmir
e-mail ID: drmanzoor@kashmiruniversity.ac.in Mobile Contact +919622901319

)r. Manzoor Ahmad Mir holds master's degree in Life Sciences (Zoology) from HNBG Central University Srinagar after qualifying)restigious National level CSIR-JRF-NET examination and completed his Ph. D at Jawaharlal Nehru University New Delhi and CSIR-Institute of Microbial Technology Chandigarh in the field of Immunology. He currently teaches at the Department of Bioresources, University of Kashmir, and has been a Research Scientist at SATCAS Stroke Research Chair University of Majmaah KSA. He has attended many courses and conferences on immunology at USA, UK, Kuwait, China, UAE, Scotland, Korea and Saudi Arabia. His basic research interests include molecular immunology, Cancer and Stroke immunology. He is presently working on)ST funded project on Tuberculosis Drug resistance. He has published more than 50 high-impact research papers and book chapters. Dr. Manzoor has authored 10 books with international publishers like Elsevier USA, Nova Science Publisher USA and)MICS international. He is currently receiving Royalty from Academic Press USA for his book in the field of Immunology entitled 'Developing costimulatory molecules for immunotherapy of diseases". Dr. Manzoor is on the editorial board of many prestigious ournals and has been an invited speaker at various scientific meetings/conferences within India and abroad. He is member of nany scientific organizations and societies like International Immunology Association, Indian Association of Immunology, CHASCON, Indian National Science Association, IMMUNOCON etc. Dr Manzoor is presently the MHRD course coordinator for he MOOC courses on Immunology and Endocrinology.

Course certificate

30% for in-course assessment and 70% for end term proctored exam

Human Genetics (Anthropology)

By Dr. Manzoor Ahmad Mir | Department of Bioresources, University of Kashmir

Learners enrolled: 943

INTRO VIDEO HUMAN GENETICS

The course on "Human Genetics" is a Discipline Specific Elective Course in Anthropology at undergraduate (UG) level under the Choice Based Credit System (CBCS). This is an introductory course designed primarily for students in the undergraduate or master's programs interested in biomedical research, genetic counselling, medicine, and clinical genetics. This course is expected introduce the rapid advancements in our understanding the role of human genome in health and disease. The course is specially designed to supplement and enhance the understanding of students about different dimensions of human genetics starting from genes to proteins and mutations in genes to the genes in the evolution of humans. Furthermore, the course is focussed on history of human genetics, evolutionary genetics; Molecular evolution; DNA sequence variation and human origins. We would introduce key concepts of inheritance of human traits, pedigree analysis, and chromosome organization. Molecular biology tools used for understanding the genome, gene structure and gene mutations, gene mapping and gene cloning strategies will also be covered in this course. Objectives and outcome of human genome project, 1000 Genomes project and the HapMap project will also be discussed. The objectives of this course is to give the target audience/students an understanding of: Structure, Function and Inheritance of the human genome, the DNA structure and its replication, Recombination and DNA repair Mechanisms and Expression of genetic Information. The relationship between genes and protein, Transcription and RNA processing, Decoding the codons; the role of transfer RNAs, Genomic Variation, Genotype-phenotype correlations, Pedigree analysis and Expressivity, Chromosomal Basis of Genetic Disorders and Genetic mapping. The course will also focus on Concept of non-mendelian inheritance and complex diseases, Genomic Diversity & Human Evolution

Summary

Course Status :	Completed
Course Type :	Elective
Language for course content :	English
Duration :	12 weeks
Category :	∘ Biological Sciences & Bioengineering
Credit Points :	4
Level :	Undergraduate
Start Date :	30 Jan 2023

Course layout

Week-1
History of Human Genetics
Introduction to Hereditary and Inheritance
Human Genome
Structure of DNA

Week-2
Replication of DNA
DNA repair and recombination
Gene expression
Coding and Non-coding regions of DNA

Week-3
Basics of expression of Genetic information
Transcription
Translation
Post translational modifications

Week-4
Relationship between genes and protein
RNA processing
Genetic Code
Decoding the codons: encoding genetic information

Week-5
Transfer RNAs (tRNA) and its role
Introduction to Genomic Variation
Origins of Genetic Diversity
Genomic Polymorphisms

Week-6
SNPs, VNTR, CNVs, and Human Genetics
Haplotypes and haplogroups
Genotype-phenotype correlations
Introduction to Epigenetics

Week-7
Common mechanisms of Epigenetics
Epigenetics and diseases
Non-coding RNAs, micro-RNAs(miRNAs) & long noncoding RNAs (lncRNAs)
Introduction to Genetic Study in Humans

Week-8
Pedigree Analysis and Expressivity
Chromosomal Basis of Genetic Disorders
Karyotypes and identification of chromosome variation
Nucleic Acid Hybridization Assays

Week-9
Cytogenetic mapping
Genetic mapping (Microsatellite and other DNA polymorphisms)
LOD score
Sequencing strategies (PCR based Sanger sequencing to Exome sequencing)

Week-10
Concept of non-mendelian inheritance and complex diseases
Introduction to Genomic Diversity & Human Evolution

Human Evolution: An Overview
Evidence from mtDNA

Week-11
Evidences from Y-chromosome
Evolutionary genetics
DNA sequence variation and human origins
Biological and cultural evolution of humans

Week-12
Genetic Counselling
Assignment's compilation
Examination

Books and references

1. Human Molecular Genetics by Tom Strachan, Andrew P. Read Garland Science/Taylor & Francis Group, 2011
2. Essentials Of Human Genetics Fifth Edition (University Press) (https://books.google.com/books?id=MQ3BIwPgjsAC&printsec=frontcover&dq=human+genetics+books&hl=en&newbks=1&newbks_redir=1&sa=X&ved=2ahUKEwiOxcnlmsL7AhVZMXAKHfkRA9MQ6AF6BAgBEAI)
By Manu L. Kothari (https://www.google.com/search?sa=X&rlz=1C1CHZN_en__1024__1024&biw=1280&bih=520&tbm=bks&tbm=bks&q=inauthor:%22Manu+L.+Kothari%22&ved=2ahUKEwiOxcnlmsL7AhVZMXAKHfkRA9MQ9Ah6BAgBEAU),
Lopa A. Mehta (https://www.google.com/search?sa=X&rlz=1C1CHZN_en__1024__1024&biw=1280&bih=520&tbm=bks&tbm=bks&q=inauthor:%22Lopa+A.+Mehta%22&ved=2ahUKEwiOxcnlmsL7AhVZMXAKHfkRA9MQ9Ah6BAgBEAY) · 2009
3. Human Genetics: Concepts and Applications by Ricki Lewis
McGraw Hill Publishers 2020.
4. Human Genetics, 6th Edition, SD Gangane, Elsevier Publishers 2021
5. Principles of Genetics by EJ Gardner, MA, Simmons and DP Snustad, 8th Edition, Willey Press 2006.

TEACHING ASSISTANT

Dr. Pir Mohd Ishfaq
Department of Bioresources
University of Kashmir

Instructor bio

Dr. Manzoor Ahmad Mir

Department Of Bioresources, University Of Kashmir

Dr. Manzoor Ahmad Mir holds Master's Degree in Life Science, qualified CSIR-JRF-NET three times; completed his Ph. D from Jawaharlal Nehru University New Delhi through CSIR-Institute of Microbial Technology Chandigarh in the field of Life Sciences. Dr Manzoor has published more than 50 high-impact research papers with a cumulative impact factor of more than 200, has published 20 books and 56 book chapters with international publishers like Elsevier USA, Springer-Nature, Nova Biomedical Science Publisher USA, IGI Global, etc. Dr. Manzoor has guided eight Ph. D scholars besides 27 Masters Project students. Dr Manzoor has currently two on-going research projects one from SERB-DST Govt of India and one from JKST&IC-DST Govt of J&K. Dr Manzoor has developed Massive Open Online Course (MOOCs) in Immunology and Endocrinology and is currently developing two more MOOC courses on Human Genetics and Human Population Genetics for UGC-CEC-SWAYAM Ministry of Education Govt of India. He is member of many scientific organizations and societies like American Association of Cancer Research, American Oncology association, Fellow of Royal British Society, International Immunology Association, Indian Cancer Society, Indian Immunology Society, etc. He is on the editorial board and Reviewer of many prestigious journals. Dr Manzoor was awarded Teachers Associate Research Excellence Award by DST Govt of India in 2019 and Summer Research Fellowship by Indian Academy of Sciences and National Science Academy in 2020 and was awarded by JKST&IC Department of Science and Technology Govt of J&K for his Breast Cancer Awareness and Research during Kashmir-Expo-2022. Dr Manzoor has visited more than 10 countries for his scientific presentations like USA, China, UK, Spain, UAE etc. He was the first nodal officer and coordinator of Kupwara University Campus and is the coordinator of IIS-Gujrat University Collaboration. Presently he is Head Department of Bioresources, University of Kashmir.
Website: http://bioresources.uok.edu.in/Main/ViewPage.aspx?Page=101

Course certificate

30% for in-course assessment and 70% for end term proctored exam

Human Population Genetics

By Dr. Manzoor Ahmad Mir | University of Kashmir

Learners enrolled: 625

Introductory Video HPG 1

The course on "Human Population Genetics" is a Discipline Specific Elective Course in Anthropology at undergraduate (UG) level under the Choice Based Credit System (CBCS) of UGC having 4 credits. This is an introductory course designed primarily for students in the undergraduate or master's programs interested in biomedical research, genetic counselling, medicine, and clinical genetics. This course is expected introduce the rapid advancements in our understanding the role of human population genetics in health and disease. The course is specially designed to supplement and enhance the understanding of students about different dimensions of human population genetics starting from Mendals laws to genetic polymorphism, mutations in genes to linkage, to evolutionary genetics to evolution of humans, The MOOC content will also shed light on the Population genetics and disease association, genetic markers in forensic science, Hardy Weinberg law, Multiple Allelism, codominance, Epistasis, migration, selection, genetic variance and Human ape comparisons This MOOC is designed to help you to learn about the fundamental bases of population and evolutionary genetics, understanding of the demographic history of our species, including how modern human populations have dispersed around the globe, how population sizes have changed

over time and the exte[illegible]ave admixed. This will provide you a basic knowledge on population genetics, the study of human migrations and humar[illegible]ne conditions. Further you will be able to discover the genetic diversity of our species, its causes and consequences, tc[illegible]ans have adapted to the great diversity of environments and the importance of the Neanderthal genome in our genetic heritage.

This MOOC is aimed at anyone who wishes to learn more about Population genetics and human evolution. It is of particular interest for students working in the field of biomedical sciences, genomics, anthropology, genetics, Zoology, Biotechnology, Evolutionary Biology etc. Once this course, is completed by a student he/she will be equipped with basic and classical knowledge of human population genetics, classical and advanced genetics and will be able to take up any advanced post graduate programmes based on genetics such as medical genetics, developmental and behavioural genetics, bioinformatics, environmental genetics, genomics etc.

Summary

Course Status :	Completed
Course Type :	Elective
Language for course content :	English
Duration :	12 weeks
Category :	◦ Biological Sciences & Bioengineering
Credit Points :	4
Level :	Undergraduate
Start Date :	30 Jan 2023
End Date :	22 Apr 2023
Enrollment Ends :	15 Mar 2023
Exam Date :	

Course layout

Week-1
Landmarks in the history of genetics
Principles in human genetics
Single locus (Mendelian) versus multi-locus (quantitative/complex) inheritance
Chromosome theory of inheritance (segregation and independent assortment)
Week-2

Mendelian Inheritance [illegible] multifactorial inheritance, polygenic inheritance),
Non- Mendelian inheri[illegible] Co-dominance and incomplete dominance,
Sex linked, epistasis; p[illegible]pressivity;
Cytoplasmic inheritance

Week-3
Introduction to Ecological Genetics and Polymorphism
Phenotypic & genotypic polymorphisms
Transient polymorphism
Balanced polymorphisms

Week-4
Models explaining the maintenance of genetic polymorphism
Relationship between sickle cell and malaria,
X-linked polymorphism,
Selection due to infectious diseases and its association with blood groups and other
Hardy-Weinberg principle

Week-5
Genotypic and allelic frequencies
Assumptions of Hardy-Weinberg equilibrium
Its applications and exception
Mechanism for dynamics in Gene Frequency

Week-6
Mutation
Selection pattern and mechanism
Genetic drift (bottle neck and founder effect),
Gene flow/migration

Week-7
Inbreeding (inbreeding co-efficient and its genetic consequences)
Population structure and admixture in human populations
Random & non-random mating (positive and negative assortative mating),
Heritability

Week-8
Linkage disequilibrium
Genetic markers utility of genetic markers in forensic,
Population and disease association studies
Human evolutionary genetics

Week-9
From Mendel to molecules
A brief history of evolutionary genetics
Epistasis and the conversion of genetic variances
Human-Ape comparisons

Week-10
Blood group typing
Colour blindness
Biochemical markers-DNA isolation
Polymerase chain reaction (PCR)

Week-11
Glucose-6-phosphate dehydrogenase deficiency
PTC tasting ability
Genetic counselling and human population genetics
Human population genetics and Forensics

Week-12
Assignment's compilation
Examination

Books and ref (https://swayam.gov.in/) (https://swayam.gov.in/nc_details/CEC)

1. Human Population Genetics 1st Edition, by John H. Relethford, Willey-Blackwell Publishers 2022.
2. Human Population Genomics, Introduction to Essential Concepts and Applications, by Kirk E. Lohmueller, Rasmus Nielsen. Springer Nature Publishers; 2021
3. Principles of Population Genetics; by Danil L Harti and Andrew J Clarke, Oxford University Press Inc, 2006
4. Human Population Genetics, 1st Edition, by John H. Relethford; Willey and Blackwell Publishers 2012
5. Population Genetics, by Rafael Maia, Intech Open Publishers UK. 2022
6. Human Population Genetics and Genomics, 1st Edition 2018, Elsevier Publishers
5. Human Genetics: Concepts and Applications by Ricki Lewis
McGraw Hill Publishers 2020.
7. Human Population Genetics; A tribute to JBS Haldane; by Partha P. Majumder Springer Nature Publishers, 1993
8. Human Genetics, 6th Edition, SD Gangane, Elsevier Publishers 2021
9. Essentials Of Human Genetics Fifth Edition (University Press)
By Manu L. Kothari, Lopa A. Mehta · 2009
10. Principles of Genetics by EJ Gardner, MA, Simmons and DP Snustad, 8th Edition, Willey Press 2006.

TEACHING ASSISTANT

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Instructor bio

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University Of Kashmir

Dr. Manzoor Ahmad Mir holds Master's Degree in Life Science, qualified CSIR-JRF-NET three times; completed his Ph. D from Jawaharlal Nehru University New Delhi through CSIR-Institute of Microbial Technology Chandigarh in the field of Life Sciences. Dr Manzoor has published more than 50 high-impact research papers with a cumulative impact factor of more than 200, has published 20 books and 56 book chapters with international publishers like Elsevier USA, Springer-Nature, Nova Biomedical Science Publisher USA, IGI Global, etc. Dr. Manzoor has guided eight Ph. D scholars besides 27 Masters Project students. Dr Manzoor has currently two on-going research projects one from SERB-DST Govt of India and one from JKST&IC-DST Govt of J&K. Dr Manzoor has developed Massive Open Online Course (MOOCs) in Immunology and Endocrinology and is currently developing two more MOOC courses on Human Genetics and Human Population Genetics for UGC-CEC-SWAYAM Ministry of Education Govt of India. He is member of many scientific organizations and societies like American Association of Cancer Research, American Oncology association, Fellow of Royal British Society, International Immunology Association, Indian Cancer Society, Indian Immunology Society, etc. He is on the editorial board and Reviewer of many prestigious journals. Dr Manzoor was awarded Teachers Associate Research Excellence Award by DST Govt of India in 2019 and Summer Research Fellowship by Indian Academy of Sciences and National Science Academy in 2020 and was awarded by JKST&IC Department of Science and Technology Govt of J&K for his Breast Cancer Awareness and Research during Kashmir-Expo-2022. Dr Manzoor has visited

Immunology

By Dr. Manzoor Ahmad Mir | University of Kashmir

Learners enrolled: 1767

Introductory Video Immunology

The course **"Immunology"** is a Discipline Specific Elective Course in B.Sc. Zoology under the Choice Based Credit System (CBSE). The course is specially designed to supplement and enhance the understanding of students about different dimensions of Immunology starting from defense systems of the body, immunity, antigens, antibodies, hypersensitivity, cytokines

complement sys how our body continuously defends us from various pathogens and maintains homeostasis against many en gens.

The objectives of this course are to give the target students/audience an understanding of:

- Fundamentals of the immunology and how our body responds to different environmental challenges.
- Early theories of Immunology, Cells , organs and molecules of the Immune system.
- Different types of immunity (innate and adaptive) employed by the immune system to defend us from foreign pathogenic attacks.
- Organization and functioning of the immune organs, cells and molecules like antibodies, cytokines and chemokines.
- Structure and functions of different classes of immunoglobulins, Antigen-antibody interactions
- Immune dysfunctions (Rheumatoid Arthritis and AIDS)
- Immunoassays (ELISA, RIA, immunoblotting and Hybridoma technology) Monoclonal antibodies in therapeutics and diagnosis
- Hypersensitivity and complement system Vaccines and their developmen

Summary

Course Status :	Completed
Course Type :	Elective
Language for course content :	English
Duration :	12 weeks
Category :	◦ Biological Sciences & Bioengineering
Credit Points :	4
Level :	Undergraduate
Start Date :	08 Jan 2024
End Date :	30 Mar 2024
Enrollment Ends :	29 Feb 2024
Exam Date :	18 May 2024 IST
Shift :	3 PM to 6 PM

Note: This exam date is subject to change based on seat availability. You can check final exam date on your hall ticket.

Course layout

WEEK 1

1 Historical Perspective of Immunology
2 Early Theories of Immunology
3 Cells of the Immune System
4 Organs of the Immune System

WEEK 2

5 Anatomical barriers of Immune system
6 Inflammation
7 Cells and Molecules of Innate Immunity
8 Cell Mediated and Humoral Immunity

WEEK 3

9 Passive and active Immunity (Artificial and Natural)
10 Immune Dysfunction (Rheumatoid Arthritis and AIDS)
11 HIV-AIDS a Global Health Emergency
12 Antigenicity and Immunogenicity

WEEK 4

13 Immunogens (Factors influencing immunogenicity)
14 Adjuvants and Haptens
15 Types of Antigens
16 B and T-cell Epitopes

WEEK 5

17. Types of Immunoglobulin's
18. Antigen antibody interactions
19 Immunoassays
20 Hybridoma Technology

WEEK 6

21 Monoclonal Antibodies in Therapeutics and Diagnostics
22 ELISA, RIA and Immunofluorescence
23 Alexa floure tagging of antibodies and Flow cytometry
24 Structure and function of MHC Molecules

WEEK 7

25 Endogenous and Exogenous pathways
26 Antigen Presenting cells
27 Antigen processing

28 Antigen prese

WEEK 8

29 B Cell and T cell Signalling in antigen presentation

30 Costimulation and reverse costimulation in presentation

31 Cytokines and their types

32 Properties and Functions of cytokines

WEEK 9

33 Therapeutic cytokines

34 Chemokines and cytokines in infectious diseases

35 Complement System and its components

36 Pathways of Complement system

WEEK 10

37 Hypersensitivity and Allergy

38 Gell and Coombs classification of Hypersensitivity

39 Aeroallergens and their control

40 Various types of hypersensitivities

WEEK 11

41 Vaccines and their properties

42 Live Vaccines

43 Attenuated and Heat killed Vaccines

44 DPT, Influenza and Polio vaccines

Books and references

At the End of every module reference materials are given in quadrant 3

Instructor bio

Dr. Manzoor Ahmad Mir

University Of Kashmir

Anthropology_Human Genetics

By Dr. Manzoor Ahmad Mir | Department of Bioresources, University of Kashmir

Learners enrolled: 1468

INTRO VIDEO HUMAN GENETICS

The course on "Human Genetics" is a Discipline Specific Elective Course in Anthropology at undergraduate (UG) level under the Choice Based Credit System (CBCS). This is an introductory course designed primarily for students in the undergraduate or master's programs interested in biomedical research, genetic counselling, medicine, and clinical genetics. This course is expected introduce the rapid advancements in our understanding the role of human genome in health and disease. The course is specially designed to supplement and enhance the understanding of students about different dimensions of human genetics starting from genes to proteins and mutations in genes to the genes in the evolution of humans. Furthermore, the course is focussed on history of human genetics, evolutionary genetics; Molecular evolution; DNA sequence variation and human origins. We would introduce key concepts of inheritance of human traits, pedigree analysis, and chromosome organization. Molecular biology tools used for understanding the genome, gene structure and gene mutations, gene mapping and gene cloning strategies will also be covered in this course. Objectives and outcome of human genome project, 1000 Genomes project and the HapMap project will also be discussed. The objectives of this course is to give the target audience/students an understanding of: Structure, Function and Inheritance of the human genome, the DNA structure and its replication Recombination and DNA repair Mechanisms and Expression of genetic Information. The relationship between genes and protein, Transcription and RNA processing, Decoding the codons the role of transfer RNAs, Genomic Variation, Genotype-phenotype correlations, Pedigree analysis and Expressivity, Chromosomal Basis of Genetic Disorders and Genetic mapping. The course will also focus on Concept of non-mendelian inheritance and complex diseases, Genomic Diversity & Human Evolution

Summary

Course Status :	Ongoing
Course Type :	Elective
Language for course content :	English
Duration :	12 weeks
Category :	◦ Zoology
Credit Points :	4
Level :	Undergraduate
Start Date :	06 Jan 2025

Course layout

Week-1
History of Human Genetics
Introduction to Hereditary and Inheritance
Human Genome
Structure of DNA

Week-2
Replication of DNA
DNA repair and recombination
Gene expression
Coding and Non-coding regions of DNA

Week-3
Basics of expression of Genetic information
Transcription
Translation
Post translational modifications

Week-4
Relationship between genes and protein
RNA processing
Genetic Code
Decoding the codons: encoding genetic information

Week-5
Transfer RNAs (tRNA) and its role
Introduction to Genomic Variation
Origins of Genetic Diversity
Genomic Polymorphisms

Week-6
SNPs, VNTR, CNVs, and Human Genetics
Haplotypes and haplogroups
Genotype-phenotype correlations
Introduction to Epigenetics

Week-7
Common mechanisms of Epigenetics
Epigenetics and diseases
Non-coding RNAs, micro-RNAs(miRNAs) & long noncoding RNAs (lncRNAs)
Introduction to Genetic Study in Humans

Week-8
Pedigree Analysis and Expressivity
Chromosomal Basis of Genetic Disorders
Karyotypes and identification of chromosome variation
Nucleic Acid Hybridization Assays

Week-9
Cytogenetic mapping
Genetic mapping (Microsatellite and other DNA polymorphisms)
LOD score

Sequencing strategies (PCR based Sanger seq[illegible]sequencing)

Week-10
Concept of non-mendelian inheritance and complex diseases
Introduction to Genomic Diversity & Human Evolution
Human Evolution: An Overview
Evidence from mtDNA

Week-11
Evidences from Y-chromosome
Evolutionary genetics
DNA sequence variation and human origins
Biological and cultural evolution of humans

Week-12
Genetic Counselling
Assignment's compilation
Examination

Books and references

1. Human Molecular Genetics by Tom Strachan, Andrew P. Read Garland Science/Taylor & Francis Group, 2011
2. Essentials Of Human Genetics Fifth Edition (University Press) (https://books.google.com/books?id=MQ3BIwPgjsAC&printsec=frontcover&dq=human+genetics+books&hl=en&newbks=1&newbks_redir=1&sa=X&ved=2ahUKEwiOxcnlmsL7AhVZMXAKHfkRA9MQ6AF6BAgBEAI)
By Manu L. Kothari (https://www.google.com/search?sa=X&rlz=1C1CHZN_en__1024__1024&biw=1280&bih=520&tbm=bks&tbm=bks&q=inauthor:%22Manu+L.+Kothari%22&ved=2ahUKEwiOxcnlmsL7AhVZMXAKHfkRA9MQ9Ah6BAgBEAU),
Lopa A. Mehta (https://www.google.com/search?sa=X&rlz=1C1CHZN_en__1024__1024&biw=1280&bih=520&tbm=bks&tbm=bks&q=inauthor:%22Lopa+A.+Mehta%22&ved=2ahUKEwiOxcnlmsL7AhVZMXAKHfkRA9MQ9Ah6BAgBEAY) · 200
3. Human Genetics: Concepts and Applications by Ricki Lewis
McGraw Hill Publishers 2020.
4. Human Genetics, 6th Edition, SD Gangane, Elsevier Publishers 2021
5. Principles of Genetics by EJ Gardner, MA, Simmons and DP Snustad, 8th Edition, Willey Press 2006.

TEACHING ASSISTANT

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Dr. Manzoor Ahmad Mir

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Dr. Manzoor Ahmad Mir holds Master's Degree in Life Science, qualified CSIR-JRF-NET three times; completed his Ph. D from Jawaharlal Nehru University New Delhi through CSIR-Institute of Microbial Technology Chandigarh in the field of Life Sciences. Dr Manzoor has published more than 50 high-impact research papers with a cumulative impact factor of more than 200, has published 20 books and 56 book chapters with international publishers like Elsevier USA, Springer-Nature, Nova Biomedical Science Publisher USA, IGI Global, etc. Dr. Manzoor has guided eight Ph. D scholars besides 27 Masters Project students. Dr Manzoor has currently two on-going research projects one from SERB-DST Govt of India and one from JKST&IC-DST Govt of J&K. Dr Manzoor has developed Massive Open Online Course (MOOCs) in Immunology and Endocrinology and is currently developing two more MOOC courses on Human Genetics and Human Population Genetics for UGC-CEC-SWAYAM Ministry of Education Govt of India. He is member of many scientific organizations and societies like American Association of Cancer Research, American Oncology association, Fellow of Royal British Society, International Immunology Association, Indian Cancer Society, Indian Immunology Society, etc. He is on the editorial board and Reviewer of many prestigious journals. Dr Manzoor was awarded Teachers Associate Research Excellence Award by DST Govt of India in 2019 and Summer Research Fellowship by Indian Academy of Sciences and National Science Academy in 2020 and was awarded by JKST&IC Department of Science and Technology Govt of J&K for his Breast Cancer Awareness and Research during Kashmir-Expo-2022. Dr Manzoor has visited more than 10 countries for his scientific presentations like USA, China, UK, Spain, UAE etc. He was the first nodal officer and coordinator of Kupwara University Campus and is the coordinator of IIS-Gujrat University Collaboration. Presently he is Head Department of Bioresources, University of Kashmir.
Website: http://bioresources.uok.edu.in/Main/ViewPage.aspx?Page=101

Course certificate

30 Marks will be allocated for Internal Assessment and 70 Marks will be allocated for end term proctored examination Securing 40% in both separately is mandatory to pass the course and get Credit Certificate.