



Course Syllabus

Course Code	Course Title	ECTS Credits
IMMU-542	Autoimmunity and Inflammatory Diseases	7.5
Prerequisites	Department	Semester
IMMU-541	Life Sciences	Spring
Type of Course	Field	Language of Instruction
Concentration-Immunology	Biomedical Sciences	English
Level of Course	Lecturer(s)	Year of Study
2 nd Cycle	Dr. Nicolaou Stella	2 nd
Mode of Delivery	Work Placement	Co-requisites
Face-to-face	N/A	None

Course Objectives:

The aim of this course is to provide an expanded inside into the cellular and molecular mechanisms of autoimmune and inflammatory disease with an overview of the different immunological methods and approaches used in the diagnosis of diseases, such as Rheumatoid Arthritis, Multiple Sclerosis, Myasthenia Gravis, etc. The course is more research orientated so as to expose and introduce students on the current research in the areas of diagnosis and treatment of autoimmune disease.

The main aims of this course are to:

- Introduce students to the mechanism of specific adaptive immune responses to non-pathogenic foreign antigens and self-antigens that lead to hypersensitivities and autoimmunity.
- Provide students with an inside to the role of antibodies and T cells in mediating allergy and autoimmunity
- Students will acquire knowledge of the importance of specific receptor mediated responses.
- Enlighten students on the concept of tolerance and provide them with an overview of the application of this as a novel approach for treatment.

Learning Outcomes:

After completion of the course, students will be expected to use the knowledge of current immunological principles to:

- Describe the mechanisms inducing immunological tolerance.

- Describe hypersensitivity reactions in health and disease.
- Discuss the outcomes of a break in tolerance as it relates to the induction of allergy and autoimmune disease.
- Discuss the generation and involvement of autoantibodies during autoimmune disease.
- Describe the immunological mechanisms and treatment of allergic disorders.
- Describe the immunological mechanisms of autoimmune disorders and their characterization as T, B or mixed as well as their treatment.
- Identify the various cytokines and co-factors involved in mediating allergy and autoimmunity.
- Critically analyze, present and discuss relevant research literature.

Course Content:

1. Hypersensitivity reactions
2. Allergy and Allergic disease
 - IgE-mediated allergic disease
 - Effector mechanisms in IgE-mediated allergic reactions
 - Non-IgE-mediated allergic disease
3. Immunological mechanism and treatment of allergic disease
 - Allergic Asthma
 - Acute Systemic Anaphylaxis
 - Atopic Dermatitis
 - Celiac Disease
 - Food Allergy
 - Induction and maintenance of tolerance
4. Autoimmunity
 - The breaking of self-tolerance
 - Autoimmune disease and pathogenic mechanisms
 - The genetic and environmental basis of autoimmunity
 - Random events leading to the initiation of autoimmunity
5. Immunological mechanism and treatment of autoimmune disease
 - Systemic Lupus Erythematosus
 - Multiple Sclerosis
 - Myasthenia Gravis
 - Rheumatoid Arthritis
 - Inflammatory bowel disease
 - Type I Diabetes
 - Immune dysregulation, polyendocrinopathy, enteropathy X-linked (IPEX)

Learning Activities and Teaching Methods:

Lectures; problem-based learning, poster and/or oral presentations of medical/research papers. The lecturer will be introducing each topic through lecture presentations. After a set of lectures on a topic, a problem-based learning section will follow to encourage learning through collaborative

work and literature research. There will be an individual research paper presentation where students will have to discuss and critically evaluate the papers while the lecturer is a moderator.

Assessment Methods:

Assignments and Presentations, Mid-term Exam; Final Exam

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Janeway's Immunobiology (Immunobiology: The Immune System (Janeway))	Kenneth Murphy	Garland Science	9 th ed. (2017)	ISBN-10: 0-8153-3642-X ISBN-13: 978-0815342434

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Cellular and Molecular Immunology (10 th ed.)	Abul K. Abbas Andrew H. H. Lichtman Shiv Pillai	Saunders	(2022)	ISBN-10: 1437715281 □ ISBN-13: 978-1437715286
Autoimmune Diagnostics	Renz, Harald	Walter de Gruyter		PRINT ISBN 9783110228649 EBOOK ISBN 9783110228656
Immunology and Immune System Disorders: Autoimmune Disorders: Symptoms, Diagnosis and Treatment	Petrov, Maria E.	Nova Biomedical	2011	PRINT ISBN

Peer-reviewed journal publications

These articles are updated annually.