



UNIVERSITY *of* NICOSIA

<b>Course Code</b> IMMU-546	<b>Course Title</b> Vaccinations and Immunizations	<b>ECTS Credits</b> 7
<b>Department</b> Life and Health Sciences	<b>Semester</b> Spring/summer	<b>Prerequisites</b> IMMU-541 Cellular and Molecular Immunology
<b>Type of Course</b> Elective	<b>Field</b> Biomedical Sciences	<b>Language of Instruction</b> English
<b>Level of Course</b> 2 <sup>nd</sup> Cycle	<b>Year of Study</b> 1 <sup>st</sup>	<b>Lecturer</b> Voniatis Constantina
<b>Mode of Delivery</b> Face to Face	<b>Work Placement</b> N/A	<b>Co-requisites</b> None

#### **Objectives of the Course:**

The aim of this course is to provide an in depth knowledge of the immune mechanisms believed to be related to vaccine developments and to introduce students to how vaccines are developed for the control of vaccine preventable diseases, and how they are used.

The specific objectives of the course are:

- To inform students of how vaccines work to stimulate the immune system.
- To cover the various types of vaccines, methods of delivery and discuss their efficacy.
- To introduce students to the various aspects of vaccine research and development
- To discuss the practice/protocol used for vaccination and the requirements for documentation records
- To inform students of the latest in vaccine research and development
- To identify key regulatory requirements, considerations and ethical standards regarding human subjects and informed consent.

#### **Learning Outcomes:**

On completion of this course, the student will be able to:

- Describe immunity, and how it relates to vaccine function.
- Explain how vaccines provide individual and community immunity
- Describe the types of vaccines in use for vaccine preventable diseases
- Assess the efficacy and efficiency of currently available vaccines and the significance of record keeping of vaccinations
- Describe how vaccines are designed and manufactured
- Interpret the recommendations for vaccination across the lifespan and name the

agency (ies) that regulate vaccination.

- Describe appropriate technologies for vaccine preparation and methods of administration and identify proper storage and handling requirements
- Explain complications related to vaccine response and the importance of documentation and vaccine record keeping
- List general reasons for vaccine failure
- Discuss how social factors can contribute to low vaccination rates ( attitudes, knowledge etc. )
- Describe the limitation to future vaccine development

### **Course Contents:**

1. The aims of immunization, Policy and strategies; Vaccination vs. immunization
2. The immune system and how vaccines works; principles of vaccine design
3. Vaccine preventable diseases; types of vaccines and composition
4. Vaccine discovery and design: Antigen discovery:
5. Antigen engineering
6. Types of vaccines and vaccine delivery technology
7. Evaluating vaccine efficacy
8. Adverse events following immunization and anaphylaxis (special populations and immunocompromised individuals)
9. Regulatory considerations; issues and controversies regarding immunization
10. Implementing immunization/therapies and strategies for insuring immunization rates
11. Storage, handling and correct administering of vaccines (record keeping and repeating)

### **Learning Activities and Teaching Methods:**

Lectures; problem based learning, poster and/or oral presentations. The lecturer will be introducing each topic through lectures and problem based learning sections with individual tasks related to data analysis.

### **Assessment Methods:**

Assignments, Presentations, Tests and Mid-term Exam/Paper; Final Exam

### **Required Textbooks/Reading:**

Authors	Title	Publisher	Edition	ISBN
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W. John W. Morrow, Nadeem A. Sheikh, Clint S. Schmidt, D. Huw Davies	Vaccinology: Principles and Practice [Hardcover]	Wiley-Blackwell;	1 edition (September 4, 2012)	<b>ISBN-10:</b> 1405185740 <b>ISBN-13:</b> 978-1405185745
Roland E. Kontermann, Stefan Dübel	Vaccines, 6th Edition	Saunders	(2013)	<b>ISBN:</b> 978-1-4557-0090-5

### Recommended Textbooks/Reading:

Authors	Title	Publisher	Edition	ISBN
Manmohan Singh, Indresh K. Srivastava	Development of Vaccines: From Discovery to Clinical Testing [Hardcover]	Wiley	1 ed. ( 2011)	<b>ISBN-10:</b> 0470256370 <b>ISBN-13:</b> 978-0470256374
Gary S. Marshall, MD	The Vaccine Handbook: A Practical Guide for Clinicians, 4E "The Purple Book"	Professional Communications, Inc	1 ed. (2012)	<b>ISBN:</b> 978-1-932610-81-9
Bhuvan P. Raval, M. M. Patel, S. K. Mallick	Cancer Vaccine Development: Exploration of New Avenues: Cancer Therapeutics Paperback	LAP LAMBERT Academic Publishing	(2011)	<b>ISBN-10:</b> 3846515949 <b>ISBN-13:</b> 978-3846515945
World Health Organization [2010]	State of the World's Vaccines and Immunization	World Health Organization	3 edition 2010	<b>ASIN:</b> B00DT65WCS
<a href="http://www.immunize.org/resources/books_refer.asp">http://www.immunize.org/resources/books_refer.asp</a>				

