

Plan of the course

Immunology

Academic year **2016/2017**

prof. dr. sc. Dora Višnjić
doc. dr. sc. Vesna Lukinović-Škudar

I. COURSE AIMS

The course is intended to provide important and recent knowledge of cellular and molecular immunology. Students will be presented large amount of complex information within three weeks; therefore, the main aim is to teach basic concepts of experimental immunology, which are also applicable in a clinical setting. The extensive additional reading will be provided for students who would like to learn more about immune system function in health and disease.

Lectures will be focused on important concepts of immune system function in physiological and pathological conditions. Seminars will include interactive discussion, as well as the presentation of clinical cases, in order to present complex mechanisms of immune response in a clear and understandable way. Practical part of the course will be performed in small groups to allow students to acquire lab-work skills related to some commonly used immunological techniques.

II. COURSE STRUCTURE

Course hours:

Lectures: 9

Seminar: 26

Practicum: 15

Total hours: 50

Lectures	7 (total 9 hours)
Seminars	12 (total 26 hours)
Practicals	3 (total 15 hours)
Total	50 hours

WEEK 1		
TYPE	TOPIC (duration)	Chapter
Lectures	Introduction to immunology (45 min) Organization of the immune system (2x45 min) Antigen processing and presentation (45 min) Innate immunity (2x45 min)	
Seminars	Antibody structure and the generation of B cell diversity (2x45) Development of B lymphocytes (45) Humoral immunity (3x45 min)	Ch 4 Ch 6 Ch 9
Practicals	Preparation of cell suspension, Immunofluorescence staining, Flow-cytometric analysis (6x45 min)	

WEEK 2		
TYPE	TOPIC (duration)	Chapter
Lectures	Regulation of the immune response (45 min) Cytokines (45 min) Immunological tolerance (45 min)	
Seminars	Antigen recognition by T lymphocytes (45 min) Development of T lymphocytes (45 min) Cellular immunity (3×45 min) Autoimmunity (3×45 min)	Ch 5 (113-120) Ch 7 Ch 8, 12 Ch 16
Practicals	Application of immunological techniques in clinical medicine (3×45)	
WEEK 3		
TYPE	TOPIC (duration)	Chapter
Lectures		
Seminars	Immunodeficiency (2×45 min) Hypersensitivity (3×45 min) Histocompatibility. Transplantation (3×45 min) Tumor immunology (2×45 min) Immunity to infections. Vaccination (2×45 min)	Ch 13 Ch 14 Ch 5 (135-145), Ch 15 Ch 17 Ch 10,11
Practical	Blood groups. Differential. (6×45 min)	

III. PLAN OF THE COURSE AND COURSE SCHEDULE

BLOCKS OF THE COURSE

Number of blocks: **1**

Block number	Start	End
1.	4.4.2017	28.4.2017

BLOCKS OF THE COURSE SCHEME

Block 1

Date	Time	Group	Course hours type	Theme	Teaching staff
Tuesday 4.4.2017.	13:00-13:45; MEF Nova vijećnica	A+B	Lectures	Introduction to immunology	prof. dr. sc. Dora Višnjić
	14:00-15:30; MEF Nova vijećnica	A+B	Lectures	Organization of the immune system	prof. dr. sc. Drago Batinić
Wednesday 5.4.2017.	08:00-08:45; MEF Nova vijećnica	A+B	Lectures	Antigen processing and presentation	prof. dr. sc. Dora Višnjić
	09:00-10:30; MEF Nova vijećnica	A+B	Lectures	Innate immunity	doc. dr. sc. Tomislav Kelava
Thursday 6.4.2017.	08:00-12:30; MEF Fiziologija I kat	A	Practicum	Preparation of cell suspension, immunofluor. staining, FACS	dr. sc. Hrvoje Lalić, doc. dr. sc. Tomislav Kelava
	13:00-17:30; MEF Fiziologija I kat	B	Practicum	Preparation of cell suspension, immunofluor. staining, FACS	Vilma Dembitz, dr. med., doc. dr. sc. Tomislav Kelava
Friday 7.4.2017.	08:00-09:30; MEF Nova vijećnica	B	Seminar	Antibody structure and the generation of B cell diversity	prof. dr. sc. Dora Višnjić
	11:00-12:30; MEF Nova vijećnica	A	Seminar	Antibody structure and the generation of B cell diversity	prof. dr. sc. Dora Višnjić
Monday 10.4.2017.	08:00-08:45; MEF Nova vijećnica	A	Seminar	Development of B lymphocytes	doc. dr. sc. Vesna Lukinović-Škudar
	09:00-11:15; MEF Nova vijećnica	A	Seminar	Humoral immunity	doc. dr. sc. Vesna Lukinović-Škudar
	11:30-12:15; MEF Nova vijećnica	B	Seminar	Development of B lymphocytes	doc. dr. sc. Vesna Lukinović-Škudar
	12:30-14:45; MEF Nova vijećnica	B	Seminar	Humoral immunity	doc. dr. sc. Vesna Lukinović-Škudar
Tuesday 11.4.2017.	08:00-08:45; MEF Nova vijećnica	A	Seminar	Antigen recognition by T lymphocytes	prof. dr. sc. Dora Višnjić
	09:00-09:45; MEF Nova vijećnica	A	Seminar	Development of T lymphocytes	izv. prof. dr. sc. Mirza Žižak
	14:00-16:15; KBC, Poliklinika	B	Practicum	Application of immunological techniques in clinical medicine	prof. dr. sc. Drago Batinić
Wednesday 12.4.2017.	08:00-08:45; MEF Nova vijećnica	B	Seminar	Antigen recognition by T lymphocytes	prof. dr. sc. Dora Višnjić
	09:00-09:45; MEF Nova vijećnica	B	Seminar	Development of T lymphocytes	izv. prof. dr. sc. Mirza Žižak
	14:00-16:15; KBC, Poliklinika	A	Practicum	Application of immunological techniques in clinical medicine	prof. dr. sc. Drago Batinić
Thursday 13.4.2017.	08:00-10:15; MEF Nova vijećnica	A	Seminar	Cellular immunity	izv. prof. dr. sc. Mirza Žižak
	10:30-12:45; MEF Nova vijećnica	B	Seminar	Cellular immunity	izv. prof. dr. sc. Mirza Žižak

Date	Time	Group	Course hours type	Theme	Teaching staff
Friday 14.4.2017.	08:00-08:45; MEF Nova vijećnica	A+B	Lectures	Regulation of the immune response	doc. dr. sc. Vesna Lukinović-Škudar
	09:00-09:45; MEF Nova vijećnica	A+B	Lectures	Cytokines	doc. dr. sc. Tomislav Kelava
	10:00-10:45; MEF Nova vijećnica	A+B	Lectures	Immunological tolerance	doc. dr. sc. Vesna Lukinović-Škudar
Tuesday 18.4.2017.	08:00-10:15; MEF Nova vijećnica	A	Seminar	Hypersensitivity	izv. prof. dr. sc. Mirza Žižak
	10:30-12:00; MEF Nova vijećnica	A	Seminar	Immunodeficiency	doc. dr. sc. Tomislav Kelava
	12:00-14:15; MEF Nova vijećnica	B	Seminar	Hypersensitivity	izv. prof. dr. sc. Mirza Žižak
	14:30-16:00; MEF Nova vijećnica	B	Seminar	Immunodeficiency	doc. dr. sc. Tomislav Kelava
Wednesday 19.4.2017.	08:00-10:15; MEF Nova vijećnica	B	Seminar	Histocompatibility. Transplantation.	prof. dr. sc. Dora Višnjić
	10:30-12:45; MEF Nova vijećnica	A	Seminar	Autoimmunity	prof. dr. sc. Drago Batinić
	13:00-17:30; MEF Fiziologija I kat	A	Practicum	Blood groups. Differential.	Alan Šučur, dr. med., dr. sc. Hrvoje Lalić
Thursday 20.4.2017.	08:00-10:15; MEF Nova vijećnica	A	Seminar	Histocompatibility. Transplantation.	prof. dr. sc. Dora Višnjić
	10:30-12:45; MEF Nova vijećnica	B	Seminar	Autoimmunity	prof. dr. sc. Drago Batinić
	13:00-17:30; MEF Fiziologija I kat	B	Practicum	Blood groups. Differential.	Vilma Dembitz, dr. med., Alan Šučur, dr. med.
Friday 21.4.2017.	08:00-09:30; MEF Nova vijećnica	B	Seminar	Tumor immunology	doc. dr. sc. Vesna Lukinović-Škudar
	10:00-11:30; MEF Nova vijećnica	B	Seminar	Immunity to infections. Vaccination.	prof. dr. sc. Danka Grčević
	12:00-13:30; MEF Nova vijećnica	A	Seminar	Tumor immunology	doc. dr. sc. Vesna Lukinović-Škudar
	14:00-15:30; MEF Nova vijećnica	A	Seminar	Immunity to infections. Vaccination.	prof. dr. sc. Danka Grčević
Friday 28.4.2017.	08:00-09:00; MEF Čačković	SVI	Exam	Provjera znanja	prof. dr. sc. Dora Višnjić
	08:00-09:00; MEF Biološka	SVI	Exam	Provjera znanja	doc. dr. sc. Vesna Lukinović-Škudar
	08:00-09:00; MEF Nova vijećnica	SVI	Exam	Provjera znanja	doc. dr. sc. Vesna Lukinović-Škudar
Tuesday 4.7.2017.	08:00-09:00; MEF Fiziologija Vježbaonica	SVI	Exam	Provjera znanja	doc. dr. sc. Vesna Lukinović-Škudar
	08:00-09:00; MEF Fiziologija Predavaonica	SVI	Exam	Provjera znanja	doc. dr. sc. Vesna Lukinović-Škudar

Date	Time	Group	Course hours type	Theme	Teaching staff
Tuesday 18.7.2017.	08:00-09:00; MEF Fiziologija Vježbaonica	SVI	Exam	Provjera znanja	prof. dr. sc. Dora Višnjic
Tuesday 5.9.2017.	08:00-09:00; MEF Fiziologija Vježbaonica	SVI	Exam	Provjera znanja	prof. dr. sc. Dora Višnjic

L-lecture, S-seminar, P-practical, NV- Nova vijećnica

The practical (P*) “Application of immunological techniques in clinical medicine” will be held at the Immunology Laboratory, Rebro University Hospital, Kišpatićeva 12 (Prof. Drago Batinić)

All other practicals will be held at the Lab, Department of Physiology.

IV. EXAMINATIONS

Final examination (written+oral) will be organized at the end of the course (Friday, 29.4.2016., 8.00 h – Cackovic Room) and several times thereafter, within the academic year. Written exam (test) will include 40 multiple-choice questions. Students need to answer at least 55% of the questions correctly to pass the written exam and to qualify for taking the oral examination. Students’ seminar work and presentation will be evaluated and included in the final score (maximum 10% of total points). The final oral examination determines the final mark of the course.

Regular terms	Date
Winter	28.4.2017.
	4.7.2017.
Summer	18.7.2017.
	5.9.2017.
Autumn	19.9.2017.

V./I. LIST OF LECTURERS AND TEACHING STAFF

1. prof. dr. sc. Dora Višnjic
2. doc. dr. sc. Vesna Lukinović-Škudar
3. prof. dr. sc. Drago Batinić

4. Vilma Dembitz, dr. med.
5. prof. dr. sc. Danka Grčević
6. doc. dr. sc. Tomislav Kelava
7. dr. sc. Hrvoje Lalić
8. Alan Šućur, dr. med.
9. izv. prof. dr. sc. Mirza Žižak
10. Darja Flegar, dr. med.

V./II EXTERNAL ASSOCIATES:

V./III UNTENURED LECTURERS:

VI. LITERATURE

A. Obligatory

Parham Peter. The Immune System, 4th (2014) Edition, New York-London, Garland Science, Taylor & Francis Group

B. Additional

1. Delves PJ, Martin SJ, Burton DR, Roitt IM, Roitt's Essential Immunology, 12th edition. Wiley-Blackwell, 2011.
2. Abbas AK, Lichtman H, Pillai S. Cellular and molecular immunology, 8th edition, Philadelphia Saunders, 2015.
3. Murphy K., Weaver C. Janeway's Immunobiology, 9th edition. New York: Garland Science; 2016.
4. Geha R, Notarangelo L. Case studies in immunology: A clinical companion, 7th edition. New York: Garland Science; 2016.
5. Hawley LB, Clarke B. Microbiology & Immunology: Board Review Series, 6th edition. Philadelphia: Lippincott Williams & Wilkins; 2013.