

SEMESTER I & II
LSM4222 ADVANCED IMMUNOLOGY

Prerequisite: LSM3223

Workload: 30 lecture hours + 20 tutorial hours

The objective of this course is to provide students with a current and up to date view of immunology. Breakthrough areas will certainly vary from year to year, but the broad subject matter will remain. Among the highly competitive areas of immunology research, the course focuses on innate immunity, dendritic cell biology, antigen processing and presentation, lymphocyte development and differentiation, induction of tolerance, mechanism of autoimmunity and allergy, host pathogen interactions and tumor immunology.

S/N	Topics	Lecture hours	
		Sem 1	Sem 2
1.	1. Innate immunity – complement activation, antimicrobial peptides, and phagocytes in innate immunity. Phagocytic receptors and mechanisms of pathogen killing inside phagosomes. Toll-like receptors – overview, structure, specificity, signaling and adjuvant role in the induction of adaptive immunity. 2. Dendritic cells – immunobiology and activation. 3. Natural killer cells –NK activation, NK cell mediated cytotoxicity, and NK cell cross-talk with other cells.	8h Liu Haiyan Florent Ginhoux	8h Gan Yunn Hwen Veronique Angeli Liu Haiyan
2.	4. Lymphocyte development - hematopoietic stem cell biology, the development of central tolerance. 5. Lymphocyte trafficking 6. Antigen presentation - antigen processing, antigen loading, MHC binding selection, and cross presentation. 7. T cell subsets – Th1, Th2, Th17 and Treg differentiation, molecular characteristics, effector mechanisms.	8h Angeli Veronique Ren Ee Chee Nicholas Gascoigne	8h Lim Yaw Chyn Herbert Schwarz Veronique Angeli
3.	8. Viral Immunity 9. Mucosal immunity and microbiome 10. Tumor immunology and immunotherapy 11. Autoimmunity and tolerance 12. Allergy 13. Transplantation	14h Liu Hai Yan Zhang Yongliang Paul MacAry Angeli Veronique	14h Liu Hai Yan Gan Yunn Hwen Herbert Schwarz Lina Lim
4.	Tutorials: Each group of students will be assigned a cutting edge journal article from a topic for oral presentation. There will be a maximum of 10 groups. Tutorial hours include two class practice sessions on critical reading of literature and art of writing critiques, group presentations and class discussion as well problem based learning.	20h All lecturers	20h All lecturers
Total Lectures: 30h			
Tutorials: 20h			
Total hours:		50h	

READING MATERIAL: Journal articles and Reviews will be provided.

MODE OF ASSESSMENT:

30% Continuous Assessment

70% Final Examination

MODULE CO-ORDINATORS:

A/P Angeli Veronique

(Semester I)

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A/P Gan Yunn Hwen

(Semester II)

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LECTURERS :

Semester I

A/P Veronique Angeli (MC)

Prof Nicholas Gascoigne

A/P Ren Ee Chee

A/P Zhang Yongliang

A/P Liu Haiyan

Dr Florent Ginhoux

A/P Paul MacAry

Semester II

A/P Gan Yunn Hwen (MC)

A/P Lim Yaw Chyn

A/P Lina Lim

A/P Herbert Schwarz

A/P Liu Haiyan

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