Adopted by the NBMFU on 17 October 2007
Valid from spring term 2008
Revised on 4 June 2008

LUNDS UNIVERSITET
Medicinska fakulteten

Biomedical, medical and public health training board (NBMFU)

BIMM55 Clinical Microbiology and Clinical Immunology

7.5 higher education credits **Second cycle**

General Information

Main field
Biomedicine

Subject
Clinical microbiology and clinical immunology

Type of course
The course is an optional specialisation in the Master of Medical Science programme in Biomedicine and is taught in term 2.

Language of instruction
English

Learning Outcomes

Knowledge and understanding
On completion of the course, students shall be able to:
- describe the most important bacterial and viral pathogens, and, starting from a few examples, compare host-pathogen interactions at molecular level;
- explain principles for the diagnosis of bacterial and viral infections;
- describe the most important analysis methods used in routine clinical microbiology and clinical immunology work;
- compare the importance of different virulence factors in the course of the disease, the use of laboratory diagnosis and disease prevention;
- describe the scientific link between the above clinical immunological methods and disease, on the basis of previous knowledge of basic immunology;
- be aware of how microbiological and immunological patient samples and analysis results are handled in a clinical laboratory.

Skills and abilities
On completion of the course, students shall be able to:
- recognise the environment and work methods of the field of laboratory medicine, with a specific focus on the included specialities clinical bacteriology, virology and immunology;
- evaluate the pros and cons of some clinical microbiological and immunological analysis methods;
- analyse a number of clinical microbiology and immunology test results using statistical methods.

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Judgment and approach

On completion of the course, students shall be able to:
- discuss the ethical consequences of dealing with patient samples.

Course Content

The course is based around PBL, explanatory lectures and laboratory sessions. Procedures for handling referrals and analysis results are described through lectures and group work. In this section, students learn about confidentiality and other regulations concerning patient identity and information, and control methods used to maintain a correct link between analysis result and patient identity throughout the testing process, and the storage of samples.

The first part of the course focuses on clinical microbiology, with the main focus on clinical bacteriology and virology, with small amounts of clinical parasitology and mycology, as well as infection serology. An overview is provided of the most common methods used in bacteriology and virology, and their link to diseases, and how the methods are used in clinical evaluation. This is combined with practical exercises in methods for the diagnosis of bacterial and viral infections. Infections involved in particular diseases such as tuberculosis, respiratory infections, gastroenteritis, hepatitis, influenza, UTIs and HIV are treated in depth from a diagnostic perspective.

The second part of the course is devoted to clinical immunology. An overview is provided of the most common methods used in Sweden to diagnose allergies (such as the analysis of IgE for specific antigens, serology for gluten intolerance), autoimmune diseases (ANA, ENA, ANCA, anti-DNA antibodies, various ELISA methods) and immune deficiency conditions (serum antibody levels, complement function analysis, cell function analyses). Each method is described with respect to its technical construction and the appearance of the results, and the scientific link to diseases and how the method is used in clinical evaluation. Laboratory exercises are carried out using fluorescence microscopy of typical ANA and ANCA results, analysis of data from flow cytometry and the performance of ELISA or a similar method.

Subjects examined

A pass on the course is worth 7.5 credits and requires a pass in examinations and participation in all laboratory exercises, group work and oral reports.

Instruction and Examination

Instruction takes place through lectures, group exercises in PBL format, and laboratory work.

Examination takes place through written examination. Two occasions for examination will be scheduled soon after the course. Re-examination will be planned by individual agreement.

Grades

The grades Pass or Fail are awarded on the course. A pass on the course requires a pass in the written examination as well as active participation in all laboratory work, group exercises and oral reports. Students who

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for a valid reason (such as illness) are unable to take part in laboratory sessions, group exercises and/or oral presentations may be awarded a pass after making a personal presentation either to the course director or the person responsible for the stage in question.

Admission Requirements

Molecular medicine (BIMA51) or at least 120 credits in scientific subjects, which must include 15 credits in basic chemistry (KEMA00, KEMA01, KEMA02, KEMA03 or equivalent), 15 credits of biochemistry or cell chemistry (MOBA02 or equivalent) and 15 credits in physiology (BIMA34 or BIOC01).

Literature

Recommended literature will be listed separately. An updated list will be posted on the course website a month before the course starts.

Further Information

The clinical microbiology stage is taught in Malmö and clinical immunology in Lund.