

## **Syllabuses – Paraclinical Part B**

Course name: **Basic Immunology – Part A**

### **Course content and aim**

Study aims:

1. Learning basic immunology principles related to the cells and molecules of the immune system
2. Understanding defense processes against causes of infection; how these defense processes develop and how the immune system acquires the ability to identify foreign antigens.
3. Basic understanding of autoimmune diseases and allergies.
4. At the end of the course students will understand the body's congenital and acquired defense mechanisms and be able to apply this understanding to pathogenesis of infectious diseases and immune diseases.

Course name: **Clinical Immunology – Part B**

### **Course content and aim**

This course aim is to provide medical students with basic knowledge in clinical immunology

- Vaccine components; passive vaccines, active vaccines, immunological memory; types of vaccines.
- Types of adjuvants that help the immune system respond to vaccination.
- Sensitivity and allergic reactions: the type II hypersensitivity response, also known as cytotoxic hypersensitivity
- Type III hypersensitivity response: type IV hypersensitivity response: type V hypersensitivity response
- Immune failure
- Immune responses to cancerous tumors
- Autoimmune diseases and the mechanisms leading to disease
- The antigen system for tissue coordination and classification
- Types of transplants; organ and tissue engineering
- Immunosuppressive therapy and immunotherapy

Course name: **Anatomy of the Human Body**

### **Course content and aim**

Course aims

- A. Structure and names of the organs of the body.

- B. Anatomy by region, and the functioning human body.
- C. Use of sources of academic information and anatomy software.
- D. Surgical dissection techniques, recognizing the healthy appearance of each organ and anatomical variations.
- E. Imaging at the level of organ identification, in parallel and in comparison to identification in the laboratory.
- F. Ultrasound at the level of organ identification and in comparison to identification in the laboratory.

Course name: **Epidemiology and Quantitative Thinking**

**Course content and aim**

This course will provide basic knowledge in modern epidemiology and quantitative thinking in medicine. The course aim is to review the range of fields of practice in epidemiology and its importance for treating patients, for determining policies for public health and preventative medicine, and for research. The course will emphasize critical reading of scientific articles.

Course name: **Ethics**

**Course content and aim**

A four-lecture mini-course that provides a glimpse of the ethical discourse in the field of biomedicine and in particular, the anchoring of this discourse within the conceptual framework of human dignity and human rights.

Course name: **Developmental Biology and Human Embryology**

**Course content and aim**

This course aims to present students with the processes responsible for healthy embryo development, from the interaction between the sperm and the egg, through the early development of the embryo, to the differentiation of the various organs. The course will teach the cellular and molecular basis of healthy embryo development, and how different factors affect it and contribute to embryo death or the formation of different defects.

Course name: **Cellular Biology – in Health and Disease**

**Course content and aim**

The course will discuss cellular biological processes during the initial stages of disease in humans. The course aim is to present the affiliation between molecular changes in the cell and disease development. These topics will help train students as doctors.

The course is divided into two parts of six meetings each. During the first six meetings the faculty's researchers will lecture on diverse topics in cell biology and demonstrate how a disruption to the cellular systems may cause disease. Each lecture will emphasize different cellular pathways.

In the second part of the course, the students will be divided into small groups and present a research article chosen from a given list, to the rest of the class. Each group will comprise three to five students. The article will be presented as follows: introduction, research question, research methods, results and conclusions. The students must discuss the challenges presented by the study, and the practical conclusions from the study for current and future medicine. Finally, the group must summarize the strengths and weaknesses of the study. The presentation must be up to 18 minutes long, with 5 extra minutes at the end of the lecture for questions from the class and from the attending lecturers (there will be two lecturers from the course at most of the lectures). At the end of the presentations in each meeting there will be a short test for the entire class; it will include one question on each lecture. The answers must be short and to the point.

Course name: **Genetics and Medical Genomics**

**Course content and aim**

This course will provide an in-depth understanding of the different fields of medical genetics, through familiarity with clinical studies, an understanding of diagnostic methods, rolling research and the use of methods in practical medicine. The second part of the course will focus on genomics.

Course name: **Human Aspects A – 4-year course**

**Course content and aim**

This is an introductory course in humanities and social sciences for medical students. The course combines information from different disciplines to provide students with a broad perspective on all the components affecting health and disease and on relationships in medicine. The course will cover the factors affecting a doctor's work and the way in which these factors can help doctors to build effective doctor-patient relationships and treatment processes, and understand the experiences and needs of patients. The course will also examine aspects related to doctors as people, the interpersonal and professional relationships they develop with their patients, the various work and support circles (staff, family, and colleagues), the effects of culture and society and more. The course will include introductory lectures on each of the course topics, in which each lecturer will review the foundations of each topic.

The course will take place in two parts:

# Semester II of the 1st year will be dedicated to medical law, an introduction to psychology and medicine and the Holocaust

# In the 2nd year, lectures will be held once a fortnight on doctor-patient communication, and an introduction to sociology

General course aims:

1. Recognition of basic concepts in humanities and social sciences related to the medical field.
2. Understanding the factors affecting a doctor's work and patient experiences.
3. Understanding the relevance of the information acquired from these disciplines on doctors' work.

Detailed aims for this year:

Psychology: the aim of the section on human development is to teach students about developmental milestones and raise their awareness of the different ways of communicating with patients of different ages. Basic concepts of the life cycle will be presented. Likewise, emphasis will be placed on the body-soul connection during development along the life cycle.

Medicine and the Holocaust:

- A. Students will be exposed to basic concepts relating to doctors' experiences during and after the Holocaust.
- B. Students will discuss the relevance and commitment arising from the Holocaust period to current health professionals.
- C. Students will be exposed to the ethical dilemmas that medical teams were required to deal with in their attempt to provide medical services in extreme situations.

The deterioration of the doctors and medical systems to a record low during the Holocaust period, on one hand, and the heroic fight of the Jewish medical teams under genocidal conditions, on the other hand, raise many universal questions about the mystery of humans and society in extreme situations, and about the red lights required with respect to the power and capabilities of the medical field to reach amazing achievements, but at the same time wreak havoc and destruction.

Medical law:

- A. Students will learn the principles of the Patients' Bill of Rights and the relevant legislation in the field of medical law, and how to implement these principles within the framework of medical meetings.
- B. Students will connect their medical knowledge with the fields of law and ethics. The legal knowledge the students acquire during this course will form a basis for cautious and honest medico-legal conduct during their practical work experiences and years of clinical work

Course name: **Medical Education and Communication A (4-year course)**

### **Course content and aim**

The course “Medical Education and Communication” is designed to provide direction, guidance and support to students on their way to becoming doctors, in parallel to their frontal studies. In this course, students will be asked to obtain a more in-depth understanding of themselves, their values, their perceptions, and their personal attitudes as humans, and in the future as doctors, by exposing them to content and different experiences and examining them with respect to the important professional values of the medical field.

The students will learn in small groups, guided by expert doctors from different disciplines. The group setting enables processing of the personal growth experience, from both their collective personal experiences and the actual experience of the group process. Over time, the group work integrates diverse teaching methods and hands-on clinical experiments; participation in projects and communication workshops; experimentation with the simulator of a medical interview with “patients” and conveying bad news; reflective writing of diaries and narratives; receiving and giving feedback. Students will learn through developing the ability for introspection and the ability to examine events, doctors, students, patients and family members. The learning will include identification of the emotions, feelings, attitudes and modes of action of themselves and of others, sharing experiences, insights and difficulties, and processing them together with their advisor and colleagues in a supportive, permissive, non-judgmental group, as well as individually with the advisor through diaries, personal feedback and narratives. All of this will be done in order to encourage the process of personal and professional development.

The first year of the four-year program is a most important and significant year, since it provides students with their first glimpse of the world of medicine. In parallel to the frontal teaching, which builds the theoretical knowledge base important for the medical profession, there is a need to develop the ability to observe and listen (both to themselves and their feelings and to the people around them); an ability that will help the students communicate with their patients, families and colleagues. The course, “Medical Education and Communication” helps to develop this ability by exposing the students to unique experiences from the world of medicine and processing these experiences in small groups.

This year will focus on the doctor-patient connection space, through an initial experience of a connection with a patient, whom they will meet, for the first time, directly and personally, in order to learn about his/her experiences as a patient. This is an important stage in the acquisition of tools and skills for building connections and communicating. This learning approach provides the first exposure to the clinic in an inclusive environment, and creation of the initial values of professionalism. In addition, the students will learn to keep a reflective diary and use it to strengthen their emotional and professional development while obtaining constructive feedback from the small group advisor.

Course aims for this year:

1. To enable the students to undergo a personal process of familiarity with themselves, as future humans and doctors, and develop their reflective abilities, including:
  - a. Developing capabilities of introspection and personal awareness and observation of others.
  - b. Developing the ability to give and accept constructive feedback, and striving for personal improvement.
  - c. Developing the ability to communicate with colleagues and during team work.
  - d. Developing critical thinking and recognizing fields in which the individual needs to develop.
  - e. Identifying ethical dilemmas in medical issues and holding in-depth discussions on these issues.
  - f. Developing responsibility for others and concern for the self.
2. To provide students with initial exposure to patients so they learn how to listen to them.
3. The group experience as a place that enables processing of experiences, listening, sharing, accepting and providing respectful criticism, recognizing the diversity among people and learning to accept and respect it.

Course name: **Introduction to Medical Microbiology – Bacteriology B, Mycology, Parasitology**

#### **Course content and aim**

The aims of the course and its discussions are to provide broad knowledge on bacterial disease vectors, the diseases they cause, and the host responses. Particular emphasis will be placed on resistance to antibiotics and vaccines, and the principles of bacterial disease detection.

Selected model bacteria will be discussed as models of disease in different tissues and body systems.

Course name: **EBM System (4-year course)**

#### **Course content and aim**

Evidence-based medicine is an approach that claims that medical intuition and clinical experience are important, but inadequate by themselves for medical decision making in a world in which knowledge is advancing at a dizzying pace.

The course aim is to give you the initial tools for dealing with the medical literature in order to answer the questions that are important for your patient.

Course aims:

The student will become familiar with the advantages and limitations of evidence-based medicine.

The student will be able to formulate a well-defined clinical question about treatment effectiveness (according to PICO = patient/population, intervention, comparison, outcome to be achieved or prevented).

The student will be able to efficiently search a suitable article on Medline to find an answer to his/her question.

The student will be able to evaluate the validity of the article with respect to the treatment.

The student will understand the differences between the different ways of presenting the results of studies that deal with treatment (RR, RRR, ARR, NNT) and will be able to calculate them using the study data.

The student will understand the difference between academic reviews and systematic reviews and meta-analysis.

The student will understand the advantages and limitations of academic reviews.

The student will understand the significance of the results of a meta-analysis and will be able to apply them.

The student will be able to progress from the patient's clinical scenario to formulating the clinical question, searching the medical literature, finding an article that answers the question, reading the article critically, and returning to the patient to provide the answer.

#### Study method

Short lectures aiming to provide a reminder of material studied in previous years in the epidemiology course and link it to the clinical context.

Exercises that use laptop computers and connection to the library of Tel Aviv University. Each student must be equipped with a laptop computer and have permission to connect to the library.

#### Checking the exercises

The grade will be given for participation, presentation of exercises, and the final assignment, which will be submitted as a presentation on the last day of the course.

The final presentation will be a group assignment; it will provide a clinical solution to a question relating to a patient, via presentation and critical reading of an article chosen by the group's members.

Course name: **Internal Medicine**

#### **Course content and aim**

The course aim is to teach the foundations of internal medicine and provide broad clinical knowledge prior to the students joining the wards.

The course is based on the theoretical basis acquired by the students during the para-clinical years; its main aim is the transition from learning the pathophysiological component of the disease to using this information to treat patients.

At the end of the course students should have acquired basic tools for understanding the professional language they will learn in the wards. The course is defined by the faculty as an integral part of the clinical studies.

The course will be based on the material learned during the systems year: 3rd year of the 6-year program/2nd year of the 4-year program. The lectures in this course will be based on clinical studies in internal medicine: cardiology, rheumatology, lungs, infections, allergies, hematology, endocrinology, neurology, gastroenterology and liver, geriatrics, oncology imaging, psychiatry and palliative medicine.

Course length: eight weeks

Course name: **Human Aspects B**

#### **Course content and aim**

This course follows the course taught in the 1st year, "Human Aspects in Medicine A".

The course will focus on doctor-patient communication and will deal with different aspects of the medical meeting and optimal conduct of the medical interview. This course will include lectures that provide the theoretical basis and guide the communication and simulation project in the course "Medical Education and Communication". The knowledge acquired by the students in this course will provide a basis for correct, tailored conduct of the medical interview in simulations and during the clinical years.

This course will also teach content related to the sociology of medicine.

Course name: **Medical Education and Communication B (4-year course)**

Commented [C1]: FROM HERE

#### **Course content and aim**

The courses in the Department of Medical Education take place yearly throughout the study program, in order to provide guidance and support to the students and enable a process of longitudinal professional-personal development. The department's aim is to deepen the students' self-knowledge of their values, perception and personal attitudes as humans, and in the future as doctors, via exposure to content and different hands-on experiences, and examining them with respect to the important professional values of the medical profession. The main course aims are to guide the development of a professional identity that is compatible with professional values, to guide and support students through



the challenges they face during studies, development of reflective skills, and development of interpersonal and communication skills.

The 2nd year involves a transition from the paraclinical introductions to the body systems, in the lead-up to the clinical years. The teaching during this year will continue mainly in groups, led by the group advisors that the students already know from the previous year. During this year, strong emphasis will be placed on a range of the most meaningful professional work tools for every doctor: interpersonal skills and communication skills for conducting an optimal medical interview, including developing the ability to take an anamnesis, and explanatory and instructional skills; the ability for observation of the self and others, including provision of meaningful and respectful feedback; and observation and attention to different issues including reflective and self-treatment skills.

Tasks in the 2nd year:

- Communication project including 4 simulations to learn how to conduct a medical interview, some of them with an actor, recorded by video for feedback. The fourth simulation is a test simulation.
- Participation in the Shadow Day - by personal coordination with the advisor. During the year each student will follow the advisor in his/her clinical work for the duration of one day – this is an opportunity to experience a day in the life of a doctor.
- Living with a stigma – self-learning, a group interview, and discussion
- A symposium on violence in the family and sexual assault

Assessment methods:

Assessment will be based on testing fulfillment of the course objectives, and through dialog and feedback with the group advisor. The course grade comprises a number of parameters:

- The quality of the self-feedback after the simulation (the focus is on self-observation and maximal learning from the simulation, and not on the level of functioning in the simulation itself).
- The test simulation
- Conduct in the group according to professional values, including attention to a number of parameters: personal responsibility, respect, attention and openness, team work and caring, and significant contribution to the group.

Course name: **Endocrine System**

**Course content and aim**

Content:

Basic knowledge of the pathophysiology of the endocrine system, the activation mechanisms (chemistry and pharmacology) of the different hormones, and their effect on the body systems.

In-depth knowledge of the endocrine diseases related to insufficient release or excessive release of hormones.

Clinical, laboratory, and imaging diagnostic methods of the endocrine system.

Excellent command of treatment methods for the different endocrine diseases.

Course extent: total number of hours: ca. 69 hours

7.2.22 – 17.2.22

The course form and structure (frontal lectures/online lectures/lectures on Zoom) are subject to change in accordance with the state of COVID-19 and university regulations.

Course name: **Renal System**

**Course content and aim**

The course, “The Renal System” is a comprehensive course aiming to connect basic physiological knowledge with the clinical expression of kidney diseases. The course will teach about different types of kidney diseases (and how they look in a kidney biopsy), electrolytic problems, acid-base disorders, hypertension etc. The course will also deal with the treatment of acute and chronic kidney failure and replacement therapies such as dialysis and kidney transplant.

Course name: **Cardiovascular System**

**Course content and aim**

An introductory course on the cardiovascular system, with introductory lectures on fundamental topics in cardiology – physiology, embryology, pathology, pharmacology – and initial exposure to the main topics in clinical cardiology – ischemic heart disease, electrophysiology (including a basic ECG course), valvular heart disease, heart failure, congenital heart diseases and more.

Course name: **Respiratory System**

**Course content and aim**

Course aim: to convey knowledge about different aspects of the respiratory system, thus providing students with an in-depth understanding of the system in the lead-up to their clinical studies in the coming years. The course is paraclinical but will include clinical aspects to emphasize the importance and clinical context of the study material.

The course will teach 3 main topics: pathology of diseases of the respiratory system; practical physiology of the respiratory system; and microbiology of the respiratory system. There will also be introductory lectures on different clinical aspects of the lungs, lung imaging, pharmacology of aerosols, and immunology of lung diseases.

Course name: **Digestive System**

**Course content and aim**

Aims of the systems course – 4th year Medicine – microbes in health and disease:

1. Learning basic concepts in microbial ecology and acquiring the ability to interpret standard graphs in the field.
2. Understanding the role of the microbiome in human development and in the maintenance of a good state of health.
3. Studying the activation mechanisms and theories that connect the microbiome to states of disease.
4. Studying the groups of bacteria and metabolites that are the current main focus of research in general, and in particular, in the context of diseases, for example, infection by *Clostridium difficile*, inflammatory bowel diseases.
5. Studying the principles for performing bacterial manipulations for healing purposes.
6. Studying the potential uses of the microbiome, such as diagnostic uses, disease prevention and their integration in medications to improve activity or prevent side effects.

Course name: **Nervous System**

**Course content and aim**

Studying the anatomy, physiology, pathology and neurology of the nervous system.

Course name: **Neuro-anatomical System**

**Course content and aim**

Studying the structure of the nervous system is essential for understanding the way the brain, spinal cord and peripheral nervous system control bodily actions, and are responsible for senses, movement, thoughts and feelings.

The course aims to comprehensively describe the structure of the human central nervous system. The course will review the embryology of the nervous system and describe the structure of the nervous

system of an adult human in depth. We will also describe the structure of the spinal cord and spinal nerves, the cortex and the hemisphere surfaces, the white matter and the subcortical nuclei, the ventricles of the brain and the spinal fluid, the brain stem and the cerebellum, the meninges and the blood supply to the brain.

During this course we will describe the motor system and the anatomy of the different sensory systems, the limbic system and the anatomy of learning and memory and the autonomic system.

Emphasis will also be placed on advanced methods in the study of brain anatomy and research and clinical applications of research on the structure of the nervous system (focusing on advanced imaging of human brain structure and function).

Course name: **Musculoskeletal System**

**Course content and aim**

Studying and understanding the anatomy, physiology, and biomechanics of the musculoskeletal system and the pathological context. Pathological states include musculoskeletal problems at different ages, such as developmental problems, bone or soft tissue trauma, inflammatory and degenerative processes, benign and malignant tumors. The course also includes study of imaging methods for the musculoskeletal system, contraindications for their clinical use, and identification of basic pathologies.

Course name: **Integumentary System**

**Course content and aim**

Content –

Acquisition of basic clinical and histological concepts in dermatology and venereology, and common diseases – infectious, tumor-related, inflammatory, and autoimmune – and dermatological expression of systemic diseases.

Course extent

Number of weekly hours and length of course (semesters) – 28 hours

Course structure –

Lectures: clinical concepts (1), healthy histology (2), pathological concepts (2), genodermatoses and congenital defects (2), dermatological expression of systemic diseases (2), granulomatous disease (1), fungal diseases (1), viral diseases (2), skin parasites (1), emergencies in soft tissue infections (1), bullous diseases (2), papulosquamous diseases (2), collagen diseases (1), vascular skin diseases (1), acne (1),

epithelial tumors (1), melanocytic tumors (2), mesenchymal tumors (1), vascular tumors in infancy (1), pediatric dermatology (1)

The overall course aim and aims of the course components –

Students will become familiar with the following: basic clinical and histopathological concepts in dermatology; common, infectious, inflammatory, malignant and vascular diseases; clinical expression, investigative and diagnostic tools, treatment methods and the expected disease course.

Course name: **Reproductive System**

#### **Course content and aim**

This course is designed for medical students in the 4- and/or 6-year study program. The course encompasses all aspects of the reproductive system in women and in men, with an emphasis on the physiology of the reproductive system, including pregnancy and birth, histopathology of the reproductive organs, and selected pathologies related to the reproductive system, fertility and birth.

The course aim is to acquire basic knowledge on this important system, as background for the future clinical studies.

Course name: **Hematological System**

#### **Course content and aim**

This course is designed to teach histology, pathology, physiology and pathophysiology in hematology, including: general hematopoiesis, erythropoiesis, polycythemia, anemia in general and B12 deficiency anemia in particular, hemolytic anemia, the lymph and bone marrow system (physiology, histology, pathology, genotypic and phenotypic development of B- and T-cells), the biological and molecular basis of the development of hematological malignancy, principles of hemato-oncology, principles of cytotoxic therapy, developing approaches to cancer treatment, including biological therapies and immunotherapy, various acceptable clinical methods for cytogenetic and molecular characterization of malignancies, lymphoid and hematopoietic malignancies (NHL lymphoma, Hodgkin's, acute lymphocytic leukemia, myeloma, CLL), myeloid malignancies (acute myeloid leukemia, myeloproliferative diseases, myelodysplastic diseases), the coagulation system, blood transfusions, imaging in the hematological system.