

# Medical Biophysics 1

## 2017 autumn

### Topic List #1

#### Topics Asked in the First Midterm

#### **A) Lectures:** weeks 1–4

- Radiation Basics
  - Basics of Radiometry (II/1.)
- Light (II/2.1. introduction)
  - Geometric Optics (II/2.1.1–2. and VIII/2.1.)
  - Wave Optics (II/2.1.3–6.)
  - Optical Anisotropy and Polarization of Light (II/2.1.7.)
  - Light as a Wave and as a Particle (II/2.1.8.)

#### *Sources required for preparation:*

- Lectures: everything told and written by the lecturer including the demonstrated experiments and the projected material, as well as the lecture slides uploaded to the website
- The Textbook (Damjanovich–Fidy–Szöllősi: Medical Biophysics): all chapters shown in brackets
- The material of the "Mathematical and Physical Basis of Medical Biophysics" subject

#### **B) Laboratory Practices:** weeks 1–4

- Introduction (Lab Manual: 30.; Mathematical and Physical Basis of Medical Biophysics book: 1–2.)
- Telemedicine (Lab Manual: extra chapter downloadable from the website; Textbook: –)
- Microscopy I (Lab Manual: 2.; Textbook: II/2.1.1–2., VI/2.1., VI/2.2.1.)
- Refractometry (Lab Manual: 4.; Textbook: II/2.1.1.)

#### *Sources required for preparation:*

- Laboratory practices: material told and written by the lab teacher and/or TA including the demonstrated experiments and the projected material, as well as the individual measurements
- The evaluation and drawings/graphs prepared for the lab report (according to the tasks listed on the website)
- The Lab Manual (Kellermayer: Medical Biophysics Practices): all chapters shown in brackets
- The additional "Telemedicine" lab manual chapter downloadable from the website
- The Textbook (Damjanovich–Fidy–Szöllősi: Medical Biophysics): all chapters shown in brackets
- Chapters of "Tölgyesi: Mathematical and Physical Basis of Medical Biophysics" e-book shown in brackets
- The material of the "Mathematical and Physical Basis of Medical Biophysics" subject

#### **C) Calculation Problems:**

- Lab Manual: 7–12., 14., 20–21.
- Microscopy I further calculations: **all of them**
- Refractometry further calculations: **all of them**

#### *Sources required for preparation:*

- The Lab Manual (Kellermayer: Medical Biophysics Practices): chapter 31: "Problems"
- .pdf documents under the "Homework problems" tab of the subject on the website

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Besides everything mentioned above, we assume that you know – even though we will not explicitly ask – the complete material of the "Mathematical and Physical Basis of Medical Biophysics" subject

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The form of the midterm is a written test containing open questions about theory, labs, drawings, and calculations. One may partake in the midterm only if a **passport** or **residence card** is presented. One may use a **pen** with blue ink (for drawings: **pencil**), a non-programmable **calculator** that cannot store textual information in its memory, a **ruler**, and a **protractor** during the midterm – all these have to be provided for by oneself. Formula collections are provided by the department, own copies may not be used. Results of the midterm will be announced by the lab teacher.