

Introduction and organization of

Seminar in physiology and instrumentation

MICRO 568

Aleksandra Radenovic

aleksandra.radenovic@epfl.ch

EPFL – Ecole Polytechnique Federale de Lausanne
Bioengineering Institute IBI

The logo of EPFL (Ecole Polytechnique Federale de Lausanne) is displayed in a bold, red, sans-serif font. The letters are thick and blocky, with the 'E' and 'F' having a distinctive shape.

11.09.2025.

Information

Time and place: Thursdays, 10h15 - 12h, room DIA 003

Objectives

- To get familiar with the state-of-the-art in medical and bio-instrumentation.
- To acquire basic understanding of related physiology associated to these instruments.

Organization

- **TA : Marianna Mitsioni**

Student presentations

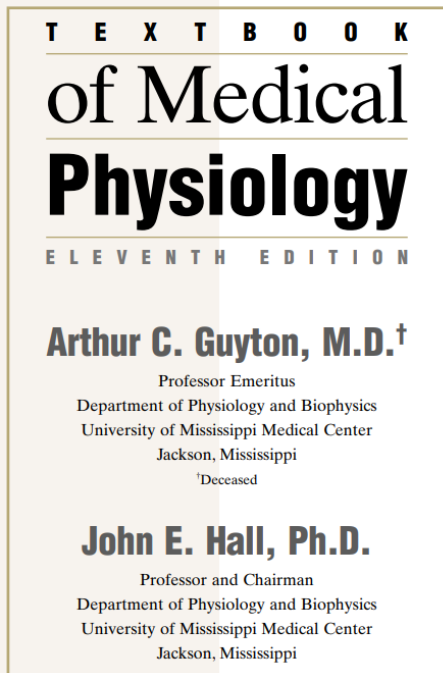
- Students are tasked with presenting a medical device or instrument closely tied to human health.
- The presentation should encompass an introductory overview of the physiology associated with the device.
- Students have the option to deliver their **presentation in either English or French.**
- Reference readings in Guyton's book on medical physiology will be provided for additional context

Exam

- Written exam, duration: 2 hours
 - Topics: based on **student presentations**.

Student presentation, there are short questions about **general aspect of the different instrument presented** during the course, possible improvements their **relevance to medical physiology**. These questions will be based on the recommended readings from **Guyton's book**.

- No docs authorized during exam
- Grading : 60% based on your presentation, 40% based on written exam



Material

MOODLE:

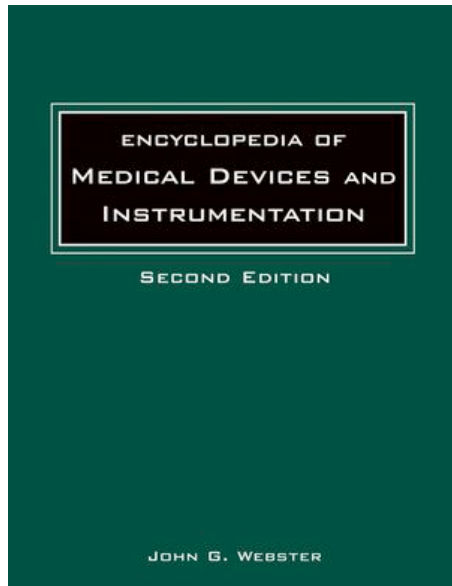
<https://moodle.epfl.ch/course/view.php?id=1381>

Password: *sensors1*

Selected and course-related chapters:

From Textbook og Medical Physiology

https://moodle.epfl.ch/pluginfile.php/1536111/mod_resource/content/3/Guyton.pdf



Selected and course-related chapters:

From Encyclopedia of Medical Devices and Instruments

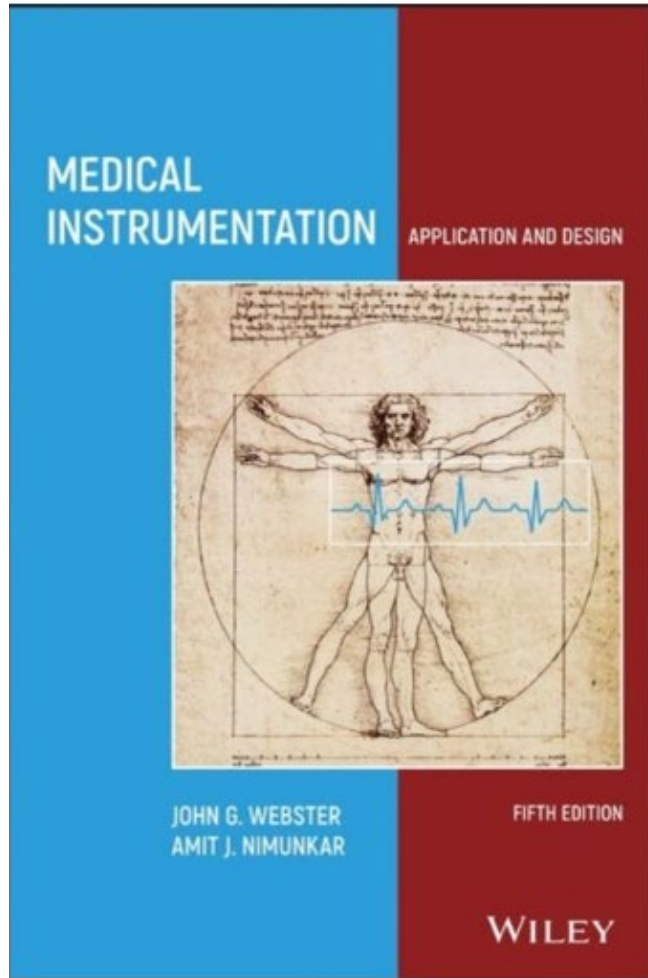
<https://moodle.epfl.ch/mod/folder/view.php?id=836897>

Material

MOODLE:

<https://moodle.epfl.ch/course/view.php?id=1381>

Password: *sensors1*



Selected and course-related chapters:

From Medical instrumentation

<https://moodle.epfl.ch/mod/folder/view.php?id=836897>

Topics for student's presentations

- **Glucose monitoring devices**
- **Electrocardiogram (ECG) monitoring**
- **Electro-encephalography (EEG)**
- **Hemodialysis**
- **Pulse oximetry**
- **Power and energy expenditure measurement in human body**
- **Blood Pressure Monitoring**
- **Power and energy expenditure measurement the in the human body**
- **Methods for sleep Monitoring Polysmonography**
- **Bioimpedance fat measuring scales**
- **Capsule Endoscopy**
- **Vagus Nerve Stimulation**
- **Hydrocephalic Valves**
- **Surgical Robots**
- **Cardiac stents**
- **Pacemakers**
- **Left Ventricular Assist Device (LVAD)**
- **Cochlear Implants**
- **Retinal implants**

Topics for student's presentations

- OCT of retina
- MRI and fMRI imaging
- PET imaging
- Photodynamic therapy
- POC Sepsis Detection (Abionic)
- Spinal cord stimulation for pain management
- Smart Orthopedic Implants
- Joint replacements –hip implants etc...
- Use of Kinect™ in rehabilitation
- Fall detector in elderly subject
- Cell Therapy
- Bone grafting
- Skin grafting

- **OR select your own topic**

2025-2026 Students

17/17	Nom Prénom	Sciper	Genre	Section
1	Alves Lopes Daniel	311575	Masculin	SV
2	Azarin Shileen	341509	Féminin	EL
3	Bach Daniel	329844	Masculin	NX
4	Barratt Alexandre	356756	Masculin	MT
5	Begon Camille Hilde Rosine	344698	Féminin	SV
6	Benlamri Neila	326660	Féminin	NX
7	Cornali Marie-Eugénie Colette	344952	Féminin	GM
8	Cortes Correa Marina	326958	Féminin	GM
9	Cvetkovska Melani	389073	Féminin	EL
10	Ferrer Baptiste	313077	Masculin	GM
11	Gandel Youri	345219	Masculin	MT_RO
12	Gouled Hema Fatouma Mahira	328879	Féminin	MT_RO
13	Ramirez Valencia Raquel Alejandra	408334	Féminin	EL
14	Rey Clémence	311111	Féminin	MT
15	Rosinska Michaela	345866	Féminin	MT
16	Tunekov Timofei	388769	Masculin	NX
17	Worthington Laura Caitlin	344753	Féminin	SV

To finalize schedule

Please send us **3** preferences starting
from suggested topics

**by next Wednesday we will communicate the schedule by
18.09.2025**

to TA

Mariana Mitsioni marianna.mitsioni@epfl.ch