

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 the École Polytechnique Fédérale de Lausanne (EPFL) is displayed in a bold, red, sans-serif font. The letters are stylized, with the 'E' and 'F' having a unique geometric design.

11.09.2024.

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 and Helena Miljkovic**

Student presentations

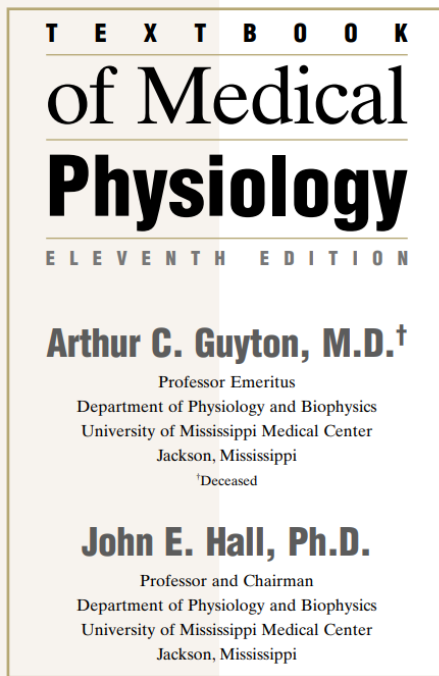
- Students are tasked with presenting a medical device or instrument closely tied to human health.
- The presentation should encompass an introductory overview of the physiology associated with the device.
- Students have the option to deliver their **presentation in either English or French.**
- Reference 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:

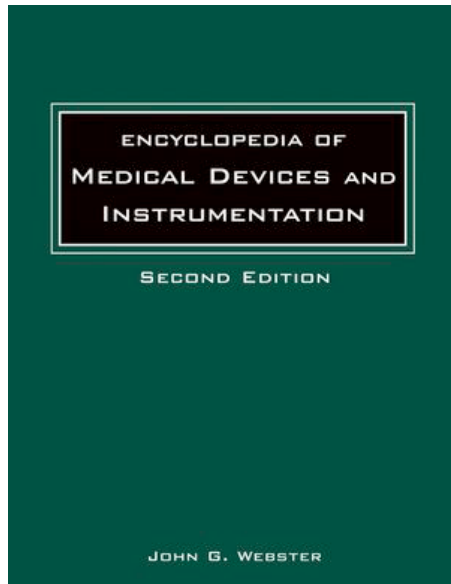
<https://moodle.epfl.ch/course/view.php?id=1381>

Password: *sensors1*

Selected and course-related chapters:

From Textbook of 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

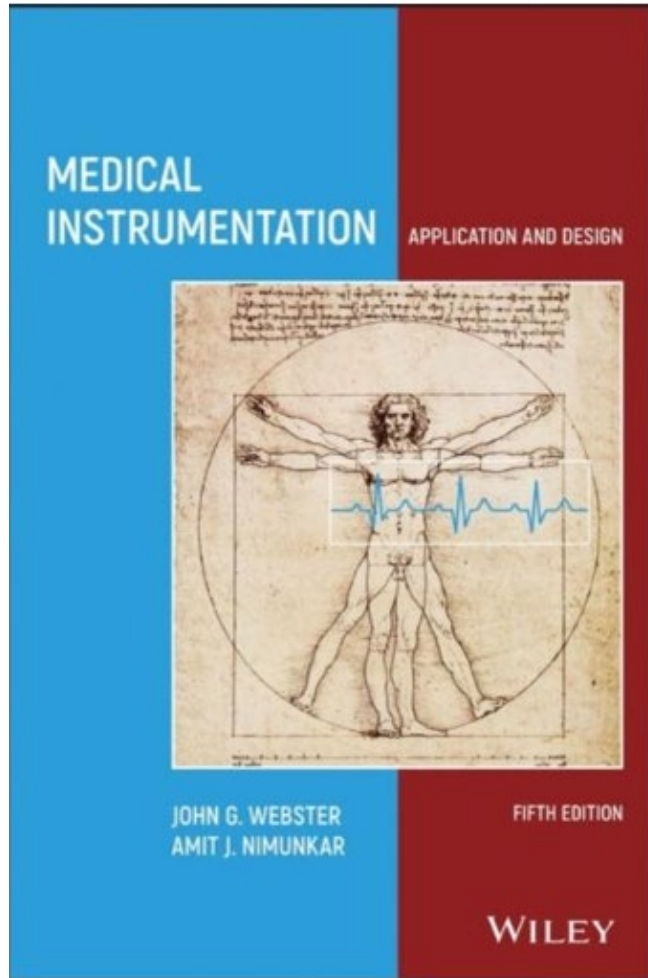
<https://moodle.epfl.ch/mod/folder/view.php?id=836897>

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**

2024-2025 Students

Enseignement: Radenovic Aleksandra

19/19	Nom Prénom	Sciper	Genre	Section	Courriel	Semestre de l'inscription	Fin d'immatriculation	Remarques sur l'i
1	Anfossi Maeva Céline	327909	Féminin	MX	✉	Master semestre 3		
2	Ayer Jennifer Joey	314451	Féminin	SV	✉	Master semestre 3		
3	Bans Alison	301843	Féminin	SV	✉	Master semestre 3		
4	Chen Christopher Yuxiang	399723	Masculin	EL_ECH	✉	Semestre automne		
5	Dai Linkai	314863	Masculin	SV	✉	Master semestre 3		
5	Demierre Gautier	340423	Masculin	MT_RO	✉	Master semestre 1		
7	Dénervaud Martin	326001	Masculin	GM	✉	Master semestre 1		
8	Drouart Aurel Christian Alain	311407	Masculin	GM	✉	Master semestre 1		
9	Gallezot Lucien Patrick Georges	316386	Masculin	MT_RO	✉	Master semestre 3		
10	Ghez Fanny Sophie	310560	Féminin	NX	✉	Master semestre 3		
11	Himmiche Farouk	315946	Masculin	EL	✉	Master semestre 3		
12	Lattion Gilles	310724	Masculin	MX	✉	Master semestre 3		
13	Munck Emma Katia	396343	Féminin	GM	✉	Master semestre 1		
14	Rodriguez Jimenez Luis Oscar	326873	Masculin	MT_RO	✉	Master semestre 1		
15	Ruiz Izquierdo Maria	394719	Féminin	SV_ECH	✉	Semestre automne		
16	Schwitter Laetitia Mercedes	315936	Féminin	SV	✉	Master semestre 3		
17	Shegurova Elizaveta	370591	Féminin	NX	✉	Master semestre 3		
18	Syla Valmir	328378	Masculin	MT_RO	✉	Master semestre 3		
19	Urban Sarah	316501	Féminin	MT_RO	✉	Master semestre 3		

To finalize schedule

Please send us **3** preferences starting
from suggested topics
**by next Wednesday we will communicate the schedule by
20.09.2024**

to TA's

Miljkovic Helena helena.miljkovic@epfl.ch

Mariana Mitsioni marianna.mitsioni@epfl.ch