

MASARYK
UNIVERSITY



M U N I



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ERASMUS+ PROGRAMME
ERASMUS+ - KEY ACTION 2
CAPACITY BUILDING IN THE FIELD OF HIGHER EDUCATION

PROJECT NO: 585980-EPP-1-2017-1-DE-CBHE-JP

TRAINING FOR MEDICAL EDUCATION VIA INNOVATIVE ETECHNOLOGY /MEDITEC

JANUARY 8-9, 2020 UNIVERSITY OF DUHOK DISSEMINATION SEMINAR

MASARYK UNIVERSITY, FACULTY OF MEDICINE, CENTER FOR HEALTHCARE QUALITY, BRNO, CZECH REPUBLIC

Erik Staffa

MASARYK
UNIVERSITY



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FACTS

9 FACULTIES, MORE THAN 200 DEPARTMENTS

21 % INTERNATIONAL STUDENTS

30 145 STUDENTS

FOUNDED 1919

..

600 FIELDS OF STUDY

7500 GRADUATES PER YEAR



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WHO ARE WE?

- The most **popular and selective** university in the Czech Republic (top rank in the number of applications for study, **53,458 applicants** for studies were registered in last year.
- Number of students: 30,145
- **Second largest employer** in the South Moravian region (**5,860 employees**)
- Around 500 **disabled students** are enrolled at MU; visual, hearing and physically impaired. There is a special university department Teiresiás assisting with their needs.



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BRNO - THE STUDENT CITY

- Second largest city in the Czech Republic
- Population of almost 380 000
- 22 % of inhabitants are students (82 000)
- 6 public and 6 private universities
- In top five student cities (QS Ranking, 2017)



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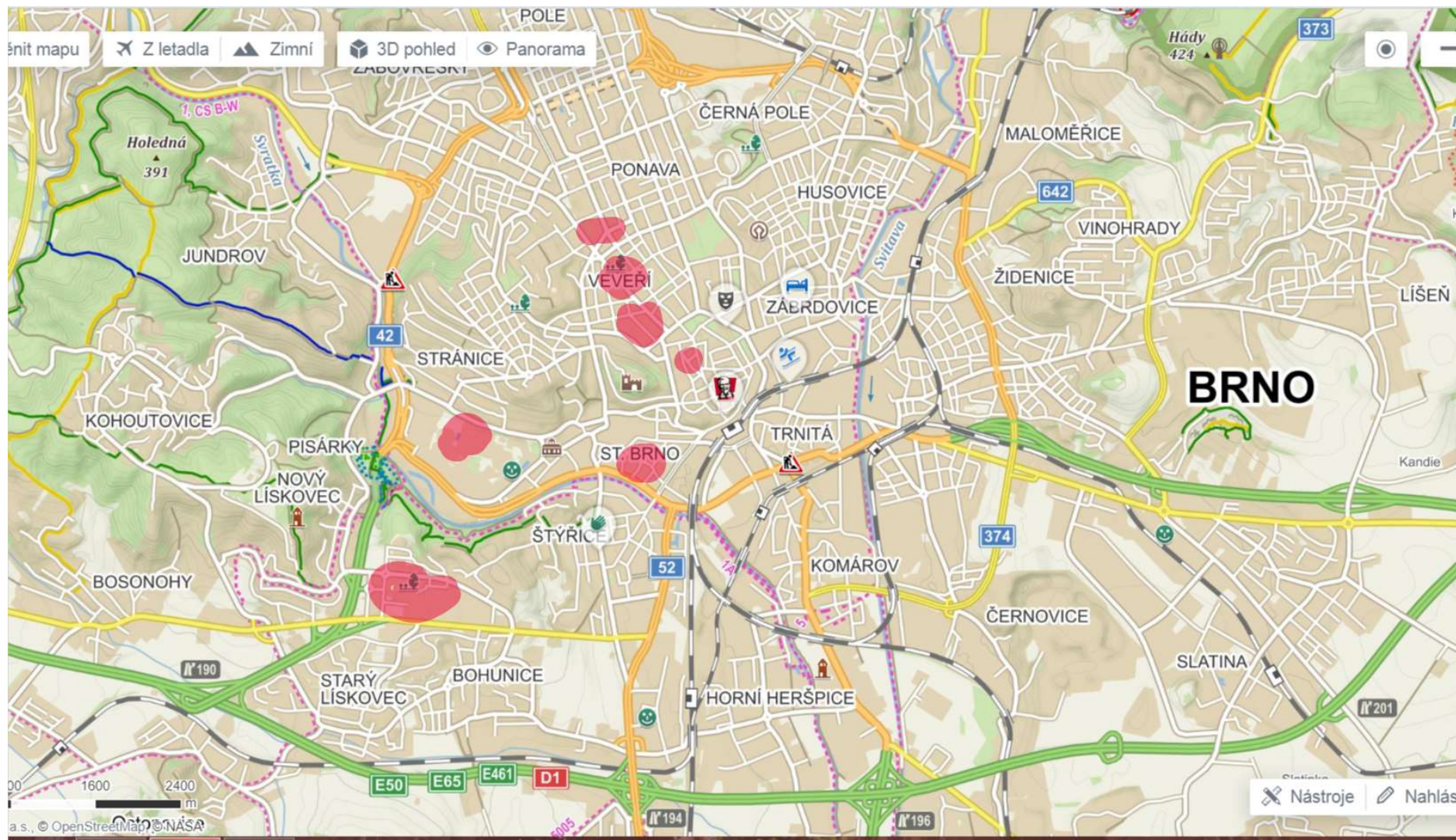


MUNI DEGREE PROGRAMME STUDY FIELDS

- Medicine, Healthcare, Dentistry /bc, long-cycle Masters
- Economics, Business Management and Finance /Mgr, PhD
- Informatics, Programming and Computer Technology /Mgr, PhD
- Social Sciences and Humanities /bc, Mgr, PhD
- Teacher Training, Pedagogy /bc, Mgr, PhD
- Languages and Literature /bc, Mgr, PhD
- Sports, Regeneration and Nutrition /PhD
- Law /PhD
- Biology, Chemistry, Geography and Geology, Mathematics and Physics /PhD



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FACULTIES OF MUNI



Faculty of Social Sciences



Faculty of Economics and
Administration

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FACULTIES OF MUNI



Faculty of Arts

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Faculty of Education



Faculty of Law

FACULTIES OF MUNI



Faculty of Science



Faculty of Informatics

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FACULTIES OF MUNI



Faculty of Medicine



Faculty of Sports Studies

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GENERAL

INFO



MUNI



Part of the University Campus





- MODERN STATE-OF-THE-ART FACILITIES (THEIR CONSTRUCTION WAS FINISHED IN 2010)
- 42 000 SQUARE METERS OF DEPARTMENTS AND CLINICS



MUNI



MASARYK UNIVERSITY

1244 EMPLOYEES (681 FEMALES) WITH TECHNICAL STAFF

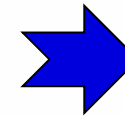
- 763 (TEACHERS)
- 1306 (TEACHING STAFF WITH EXTERNALS)

▪ 4320 STUDENTS (2783 FEMALES)

- 686 (BACHELOR DEGREE)
- 2916 (MASTER DEGREE)
- 518 (DOCTOR DEGREE)

▪ APPLICANTS FOR THE 1ST YEAR (GENERAL MEDICINE) - CZECH

- 3373 (2716 COMERS)
- 452 ACCEPTED + 171 (ENGLISH PROGRAME)



Entrance examination

▪ APPLICANTS FOR THE 1ST YEAR (DENTAL MEDICINE)

- CZECH
1149 (949 COMERS)

- 95 ACCEPTED

FACULTY OF MEDICINE GENERAL

INFO



MUNI



4. Which of the sets includes only vector quantities?

- a) amount of substance, force, pressure b) distance, acceleration, pressure
c) impulse of force, instantaneous velocity, momentum
d) power, capacitance, voltage e) No answer is correct.

5. A race car slows down after finishing the race (uniformly decelerated rectilinear motion) with deceleration (negative acceleration) of $-2.0 \text{ m}\cdot\text{s}^{-2}$. How long will take this deceleration from the full speed of $80 \text{ m}\cdot\text{s}^{-1}$ to zero speed?

- a) 10 s b) 40 s c) 100 s d) 200 s e) No answer is correct.

6. A particle moves uniformly in circles with a radius of 20 cm and at a constant speed of $200 \text{ m}\cdot\text{s}^{-1}$. What is the frequency of its circling?

- a) 15.92 Hz b) 100 Hz c) 159.2 Hz d) 10 Hz e) No answer is correct.

7. A body moving at a velocity of $100 \text{ m}\cdot\text{s}^{-1}$ was stopped by a constant force of 100 N in 10 s. What is the mass of the body?

- a) Data are insufficient for the calculation. b) 0.1 kg c) 1 kg d) 10 kg e) No answer is correct.

8. A toy with a 100%-efficiency 2W-drive moves on a horizontal flat surface at a constant velocity. The force exerted by the drive to overcome friction is 4 N (assume a force parallel to the toy's direction of movement). What is the velocity of the toy?

- a) $0.5 \text{ m}\cdot\text{s}^{-1}$ b) $2 \text{ m}\cdot\text{s}^{-1}$ c) $8 \text{ m}\cdot\text{s}^{-1}$
d) Impossible to calculate without knowing the friction coefficient. e) No answer is correct.



MASARYK UNIVERSITY



3 100 BEDS FULLY ACCESSIBLE FOR
TEACHING



MUNI



MASTER'S DEGREE

- BIOANALYTICS AND LABORATORY DIAGNOSTIC - EMBRYOLOGIST
- DENTISTRY
- GENERAL MEDICINE

BACHELOR'S DEGREES

- PARAMEDIC (EMERGENCY MEDICINE)
- OPTICS AND OPTOMETRY
- MIDWIFE CARE
- DENTAL HYGIENE
- NUTRICAL THERAPEUTICS
- LABORATORY DIAGNOSTIC
- PHYSIOTHERAPY
- RADIOLOGY ASSISTANT
- GENERAL NURSE AND INTENSIVE CARE

**DEGREE PROGRAMMES
IN CZECH LANGUAGE**



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- GENERAL MEDICINE
- DENTISTRY
- PHYSIOTHERAPY

DEGREE
PROGRAMMES
IN ENGLISH



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- ONE ACADEMIC YEAR IS DIVIDED IN TWO SEMESTERS WHICH CONSIST OF 15 WEEKS EACH, FOLLOWED BY 6 WEEKS OF EXAMINATION PERIOD
- THE FIRST TWO YEARS OF STUDY ARE THEORETICAL
- ESSENTIAL COURSES ARE BIOPHYSICS, CHEMISTRY, BIOLOGY, LATIN, ANATOMY, BIOCHEMISTRY, HISTOLOGY AND EMBRYOLOGY, PHYSIOLOGY
- THE THIRD YEAR OF STUDY INCLUDES PRE-CLINICAL COURSES SUCH AS, PATHOLOGY, PATHOPHYSIOLOGY, IMMUNOLOGY, MICROBIOLOGY, AND ALSO INSTRUCTIONS IN PRACTICAL APPROACH TO EXAMINING PATIENTS



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PRE-CLINICAL YEARS
GENERAL MEDICINE

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- THE FOURTH AND FIFTH YEARS CONSIST OF PRACTICAL BLOCKS OF 1-2 WEEKS IN HOSPITALS
- BLOCKS CONSISTS OF LECTURES AND PRACTICAL TRAINING ON PATIENTS
- PHARMACOLOGY, INTERNAL MEDICINE, SURGERY, ORTOPEADICS, GYNECOLOGY AND OBSTETRICS, PSYCHIATRY, FORENSIC MEDICINE, INTENSIVE CARE, OPHTALMOLOGY, NEUROLOGY, PAEDIATRICS, ONCOLOGY ETC.
- EXAMS CAN BE DONE AFTER EACH PRACTICAL BLOC



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CLINICAL YEARS
GENERAL MEDICINE



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- THE SIXTH AND FINAL YEAR OF STUDY CONSISTS OF HOSPITAL INTERNSHIP AND STATE EXAMS
- INTERNAL MEDICINE (7 WEEKS)
- SURGERY (5 WEEKS)
- FAMILY MEDICINE (4 WEEKS)
- PEDIATRICS (2 WEEKS)
- GYNECOLOGY AND OBSTETRICS (1 WEEK)



SIXTH YEAR (STATE EXAMS) GENERAL MEDICINE



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SEMESTER 1

- Anatomy I
- Biophysics
- Biology
- First aid
- Basic of medical therminology I
- English I
- **Optional:** search in health databases and scientific writing

SEMESTER 2

- Anatomy II - dissections
- Biology II
- Histology and embryology I
- Basic of medical terminology II
- English II
- **Optional:** Biophysics practise – medical physics
- Ionising radiation in medicine

SEMESTER 3

- Biochemistry I
- Physiology I
- Histology and embryology II
- Basics of general nurse care

University of Duhok
College of Medicine
Medical Educational Department
Phase 1

	SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	SEMESTER 5	SEMESTER 6
	Scientific Debate	Molecules, Genes & Disease	Musculo-skeletal System	Forensic Medicine	Student-selected Component	Student-selected Component
Longitudinal Themes	Computer	Tissues of the Body	Mechanisms of Diseases	Urinary System	Infection & Immunity ¹	Infection & Immunity ²
	Medical Biophysics	Metabolism	Cardio-vascular System	Respiratory System	Reproductive System	Nervous System
	Kurdology	Health & Disease in Populations	Membranes & Receptors	Gastro-intestinal System	Head & Neck	Clinical Pharmacology
	English Language & Terminology	Clinical Problem Solving ¹	Clinical Problem Solving ²	Health Psychology & Diversity	Health & Disease in Society	Integrative
Clinical Foundation Skills and LwLTC						

SEMESTER 4


- Medical microbiology I
- Biochemistry II
- Physiology II
- Propedeutics I
- Theoretical basics of clinical medicine I
- Basics of general nurse care
- Manipulation with chemical composis
- Vacantion practise

SEMESTER 5

- Propedeutics II
- Immunology
- Medical microbiology II
- Pathology I
- Pathological physiology I
- Teoretical basics of clinical medicine II

SEMESTER 6

- Propedeutics III
- Pathology II
- Pathological physiology II
- Teoretical basics of clinical medicine III
- Vacantion practise

 University of Duhok College of Medicine Medical Educational Department Phase 1 						
	SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	SEMESTER 5	SEMESTER 6
	Scientific Debate	Molecules, Genes & Disease	Musculo-skeletal System	Forensic Medicine	Student-selected Component	Student-selected Component
Longitudinal Themes	Computer	Tissues of the Body	Mechanisms of Diseases	Urinary System	Infection & Immunity ¹	Infection & Immunity ²
	Medical Biophysics	Metabolism	Cardio-vascular System	Respiratory System	Reproductive System	Nervous System
	Kurdology	Health & Disease in Populations	Membranes & Receptors	Gastro-intestinal System	Head & Neck	Clinical Pharmacology
	English Language & Terminology	Clinical Problem Solving ¹	Clinical Problem Solving ²	Health Psychology & Diversity	Health & Disease in Society	Integrative
	Clinical Foundation Skills and LwLTC					

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SEMESTER 7 and 8

- Blocks of practical skills and internships – groups by 20-25 students
- Farmacology I
- Surgery I
- Theoretical background of clinical medicine IV

SEMESTER 8

- Surgery II
- Farmacology II

Both of semesters depends on time

- Imaging methods
- Infectious diseases
- Clinical genetics
- Orthopaedic and rehabilitation
- Pediatrics
- Stomatology
- Internal medicine
- Dhermathovenerology
- Medical etics
- Medical psychology and psychosomatic
- Oftalmology
- Othorinolaryngology

Optional

- News in oftalmology
- Clinical biochemistry
- Legal aspects of medicine
- Anesthesiology and pain
- Immunology and allergology
- Palliativ care
- Sports medicine
- Basics of antimicrobial therapy
- Herbal medicine

ملحق رقم 3: خارطة منهج الطور الثاني

	4 TH YEAR	5 TH YEAR	6 TH YEAR
6/9-17/10	GIT	CHILD 1	CHILD 2+ REPROD 2
18/10-26/12	MSK	REPROD 1	Cancer care
27/12-6/2	Cardio-Respiratory	Perioperative	Student Selected Component
7/2-27/2	Student Selected Component	Student Selected Component	JOB SHADOW
28/2-9/4	Endocrine+Renal	Special senses	Chronic care /Elderlv
10/4-22/5	MENTAL	Clinical methods	ACUTE CARE

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SEMESTER 9

- Pediatrics
- Reproduction and gynecology
- Surgery I
- Differential diagnostic – surgery

SEMESTER 10

- Pediatrics II
- Reproduction and gynecology II
- Surgery II
- Differential diagnostic – internal medicine
- Internal medicine

Optional

- Clinical oncology
- Intensive medicine
- Surgery III
- Infectious diseases
- Neurology
- Psychiatry
- Internal medicine (nefrol., diab., rheuma., endocrin.,GIT, hemat., cardiology, angiology)

ملحق رقم 3: خارطة منهج الطور الثاني

	4 TH YEAR	5 TH YEAR	6 TH YEAR
6/9-17/10	GIT	CHILD 1	CHILD 2+ REPROD 2
18/10-26/12	MSK	REPROD 1	Cancer care
27/12-6/2	Cardio- Respiratory	Perioperative	Student Selected Component
7/2-27/2	Student Selected Component	Student Selected Component	JOB SHADOW
28/2-9/4	Endocrine+ Renal	Special senses	Chronic care /Elderly
10/4-22/5	MENTAL	Clinical methods	ACUTE CARE



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Biophysics department

Biophysics practice

Number of employes: 11

Number of asistants: 7

Number of professor: 1

Number of PhD students: 3



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Divided to lecture (2+1 hours/week) and practical seminar (4 hours/week)

Biophysics introduction

- Theory of matter
- Biological aspects of ionising radiation
- Thermodynamics laws
- Introduction into molecular biology
- Biophysics of membranes and bioelectrical effects
- Biophysics of cardiovascular system
- Biophysics of respiratory
- Biophysical function of sensory organs and receptors
- Effects of mechanical and acoustic fields
- Effects of electromagnetics fields
- Introduction into biocybernetics and modeling

Principles of medical technique

- Biosignals and analysis
- X-rays diagnostics
- Tomography (CT, MRI)
- Diagnostic by using radionuclides
- Therapy by ionising radiation
- Measurement of the human temperature
- Optical laboratory methods
- Optical diagnostics methods
- Electrodiagnostics methods
- Ultrasound sonography methods
- Doppler and sonography combine methods
- Methods for physical therapy and mechanical measurement
- Modern surgery methods and lithotripsy
- Nanotechnology and artificial organs



M U N I



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Practical seminary 38 groups with ca 20 students

Divided to 4 sections:

- Two sections with autonomous working
- Section with collective exercises
- Section of health informatics





M U N I



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Tasks for the autonomous working

- Measuring of electrical signals
- Measuring of blood pressure
- Audiometry
- Determination of characteristic of thermocouple
- Analysis of acoustic signals of voice





M U N I



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Tasks for the autonomous working

- Laboratory methods – **basics of the laboratory work and equipment**
- Spectrophotometry – concentration absorption curve of Eosin
- Measuring of surface tension (Stalagmometry and tensiometry)
- Measuring of viscosity (Oswalds viscometer)
- Refractometry (concentration of NaCl) and Conductometry (simulation of conductivity of membrane)





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- Measuring of ionising radiation (by scintillation detector)
- Hemolysis of erythrocytes by ultrasound field





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Section of collective excersises

- Ultrasound diagnostics
- Elektrocardiography
- X-rays and ionising radiation
- Optics and eye examination
- Effect of magnetic fields
- Thermography



Section of health informatics

- Basics of health care – information systems
- E-learning
- Medical libraries and e-sources – basics of searching in databases (PubMed, Web of Science, SCOPUS, journal citations report - IF)
- Analysis of the image (properties of images), digitalization of the signal



WEB OF SCIENCE



2018

Simulation Centre

The Simulation Centre (SIMU) of the Faculty of Medicine of Masaryk University (FM MU) will become a unique teaching workplace within the Czech Republic in which practical training of students of the FM MU will take place. The new centre will provide the conditions for a wide range of modern educational elements.



MUNI **Medical**
MED **Simulation**
Centre



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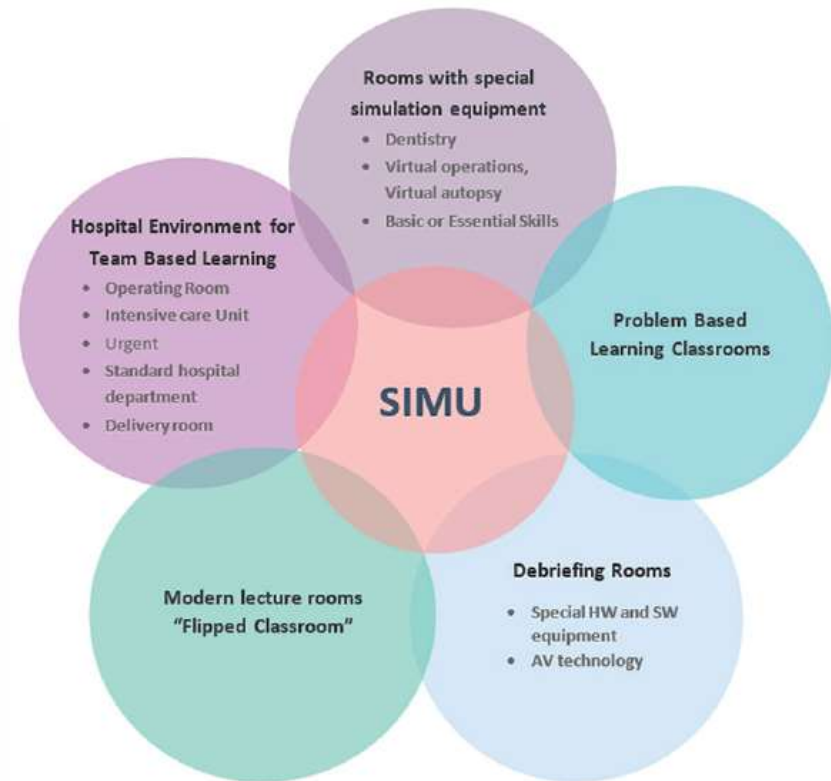
EUROPEAN UNION
European Structural and Investment Funds
OP Research,
Development and Education



MINISTRY OF EDUCATION,
YOUTH AND SPORTS

SIMU will be mainly unique in:

- the scope and concept of introducing simulation methods into teaching,
- the standardization of teaching and its continuous evaluation,
- the introduction of OSCE (Objective Structured Clinical Examination),
- the range of the spectrum of simulation methods and their mutual integration across the curricula of the concerned study programmes,
- increasing the effectiveness of practical teaching,
- the centralization of simulation methods into one compound (simulation of the hospital environment),
- the simulation of the real hospital and pre-hospital environment,
- specialized equipment covering a whole range of simulation methods.





1. To innovate the teaching of medical programmes at Masaryk University through the integration of advanced elements of simulation medicine into regular teaching

- implementation of employers' requirements in the curriculum,
- development of practical training by introducing a complex spectrum of simulation teaching methods into selected subjects,
 - development of students' soft skills.

2. To provide the infrastructure needs of innovative teaching through the creation of SIMU – the FM MU Simulation Centre

- construction of SIMU building with an optimally designed structure of specialized classrooms taking into account the introduction of modern forms of teaching into the curriculum, and the premises simulating real hospital environment,
 - furnishing the premises with relevant equipment and simulators,
- preparation of simulators and acquired equipment according to the needs of the newly conceived teaching methods,
 - training of technicians and analysts,
- creation of new standards and procedures for the use of acquired equipment.

SIMU construction



A modern, low-energy building will simulate a real hospital environment, from an Emergency Department with a fully equipped mock-up ambulance car, through heliport, operating theatres, ICU, delivery room, examination room, dental surgery, to standard hospital rooms. With simulators students will have the opportunity to try out standard, complex, and very complicated tasks that they will have to master in their future clinical or private practice, but which they do not have the chance to learn under the current model of teaching.



The first floor will simulate an Emergency Department, including a fully equipped mock-up ambulance car and emergency beds. The second floor will be used for simulated dental education and there will be training halls, laboratories, and gnathology training areas. The third floor will contain lecture rooms and dedicated classrooms for team-based and problem-based learning. The fourth floor will simulate a real hospital environment. The fifth floor will serve as a seat of an expert team and the management of SIMU. The area above the bridging will even have its heliport simulator.



The floor simulating hospital

The fourth floor, which will simulate a true hospital environment, will consist of a full surgical department with two operating theatres, filters, and an antechamber. Furthermore, there will be intensive care units, field-specific simulations, and standard hospital rooms.

These simulation rooms, which will faithfully imitate the hospital environment, will be equipped with high-fidelity training models, trainers, or simulators, as well as state-of-the-art technologies including audiovisual recording technology for ongoing simulations.

In addition to these rooms designed for the simulation training itself, there will be so-called control rooms from which complex simulations will be managed by trained personnel and a room for debriefing where analyses and assessments of the course of simulation with teachers will be carried out.

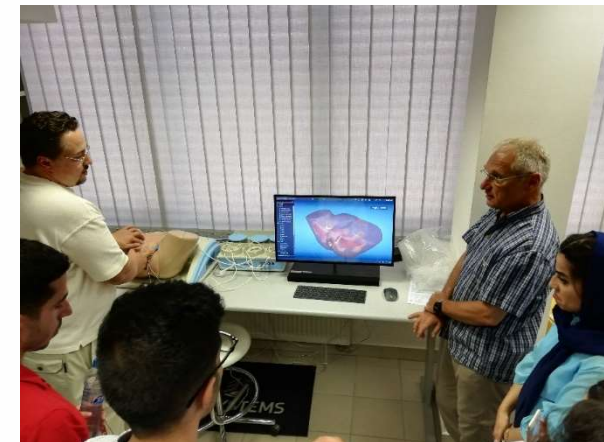
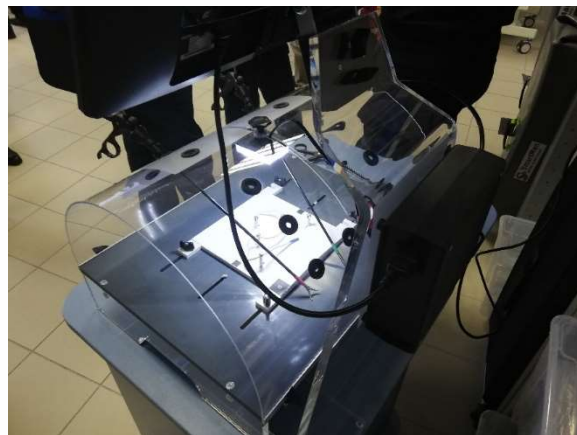




WEBCAM from the place



Present equipment and how it is working now



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Links

- MEFANET: <https://portal.med.muni.cz/index-en.php>
- Biophysics department: <https://med.muni.cz/biofyz>
- <https://med.muni.cz>

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Thank you for your attention !

