### Recomended pass through the study plan

## Name of the pass: Specialization Image processing - Passage through study

Faculty/Institute/Others: Faculty of Electrical Engineering

Department:

Pass through the study plan: Medical Electronics and Bioinformatics - Specialization Image Processing

Branch of study guranteed by the department: Welcome page

Guarantor of the study branch:

Program of study: Medical Electronics and Bioinformatics

Type of study: Follow-up master full-time

Note on the pass:

Coding of roles of courses and groups of courses:

P - compulsory courses of the program, PO - compulsory courses of the branch, Z - compulsory courses, S - compulsory elective courses, PV - compulsory elective courses, F - elective specialized courses, V - elective courses, T - physical training courses

Coding of ways of completion of courses (KZ/Z/ZK) and coding of semesters (Z/L):

KZ - graded assesment, Z - assesment, ZK - examination, L - summer semester, Z - winter semester

#### Number of semester: 1

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BEAM31LET	Medical Instrumentation and Devices Jan Havlík Jan Havlík (Gar.)	Z,ZK	6	2P+2L	Z	Р
BEEZM	Safety in Electrical Engineering for a master's degree Vladimír K la, Ivana Nová, Josef ernohous, Radek Havlí ek Radek Havlí ek Vladimír K la (Gar.)	Z	0	2BP+2BC	Z	Р
BE4M36SAN	Statistical data analysis Ji í Kléma <b>Ji í Kléma</b> Ji í Kléma (Gar.)	Z,ZK	6	2P+2C	Z	Р
BE4M33PAL	Advanced Algorithms  Marko Genyk-Berezovskyj, Daniel Pr ša Daniel Pr ša Daniel Pr ša (Gar.)	Z,ZK	6	2P+2C	Z	PS
BE4M33SSU	Statistical Machine Learning Jan Drchal, Vojt ch Franc, Boris Flach (Gar.)	Z,ZK	6	2P+2C	Z	PS
2018_MBIOEPPV3	Compulsory elective subjects of the programme BEAM31ADA,BEAM31ZAS, (see the list of groups below)	Min. cours. 4 Max. cours. 4	Min/Max 24/24			PV

#### Number of semester: 2

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BEAM31BSG	Biological signals Petr Ježdík, Roman mejla, Michal Novotný Roman mejla Roman mejla (Gar.)	Z,ZK	6	2P+2L	L	Р
BEAM33ZSL	Medical Imaging Systems Robert Holaj, Jan Kybic, André Sopczak, Jan Petr, André Sopczak Jan Kybic Jan Kybic (Gar.)	Z,ZK	6	2P+2C	L	Р
BE4M35KO	Combinatorial Optimization  Zden k Hanzálek <b>Zden k Hanzálek</b>	Z,ZK	6	3P+2C	L	PS
BE4M33MPV	Computer Vision Methods Georgios Tolias, Ji í Matas, Jan ech, Dmytro Mishkin, Ond ej Drbohlav Ond ej Drbohlav Ji í Matas (Gar.)	Z,ZK	6	2P+2C	L	PS
2018_MBIOEPPV3	Compulsory elective subjects of the programme BEAM31ADA,BEAM31ZAS, (see the list of groups below)	Min. cours. 4 Max. cours. 4	Min/Max 24/24			PV

Number of semester: 3

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BEMPROJ6	Diploma Project Vratislav Fabián, Roman mejla, Jan Kybic, Petr Pošík Petr Pošík Jan Kybic (Gar.)	Z	6	0p+6s	Z,L	Р
BEAM33ZMO	Medical Image Processing Jan Kybic Jan Kybic Jan Kybic (Gar.)	Z,ZK	6	2P+2C	Z	PS
2018_MBIOEPPV3	Compulsory elective subjects of the programme BEAM31ADA,BEAM31ZAS, (see the list of groups below)	Min. cours. 4 Max. cours. 4	Min/Max 24/24			PV
2018_MBIOEVOL	Elective subjects	Min. cours.	Min/Max 0/999			V

# Number of semester: 4

	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BDIP30	Diploma Thesis	Z	30	22s	L	Р

# List of groups of courses of this pass with the complete content of members of individual groups

Kód		Name of the group o group (for specificati	f courses and on see here o	codes of members of this r below the list of courses)	Com	pletion	Credits	Scope	Semester	Role
2018_MBIC	EPPV3	Compulsory el	ective subject	s of the programme		cours. 4 . cours. 4	Min/Ma: 24/24	<b>(</b>		PV
BEAM31ADA	Adaptive s	ignal processing	BEAM31ZAS	Analog Signal Processing		BEAM17	EPM A	oplications o	f Electromagn	etic
BEAM31AOL	Applied op	toelectronics in medic	BEAM36BIN	Bioinformatics		BEAM02	BIO B	) Biosensors		
BEAM38KLS	Construction	on of Medical Systems	BE2M31DSPA	Digital Signal Processing		BEAM17	EMC Ir	troduction to	Electromagne	etic
BEAM31MOA	Modeling a	and analysis of brain a	BEAM33MOS	Modeling and Simulation		BE4M36	MBG Molecular Biology and Genetics		tics	
BEAM33NIN	Neuroinfor	matics	BEAM31NPG	Neurophysiology		BEAM02FPT Physics for Diagnostics and Th		Ther		
BE0M37FAV	Physiology	and modeling of heari	BE4M36SMU	Symbolic Machine Learning						
2018_MBI	DEVOL		Elective subj	ects	Min.	cours.	Min/Ma 0/999	(		V

# List of courses of this pass:

Code	Name of the course	Completion	Credits
BDIP30	Diploma Thesis	Z	30
Independent final	comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or	ner branch of study	, which will
be specified I	by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the compreh	ensive final examir	nation.
BE0M37FAV	Physiology and modeling of hearing and vision	Z,ZK	6
The primary aim of	the course is to study the physiology of sensors and processes of perception of audio and visual information by human subjects as t	wo central and mo	st importan
communication ch	annels, i.e., Human Auditory System (HAS) and Human Visual System (HVS). The course summarizes current knowledge in the field	d of human vision a	ind hearing
physiology and, at	the same time, presents their description using mathematical models using the latest computational tools and procedures, including	Machine Learning	(ML), Deep
Learning (DL) and	Artificial Intelligence (AI). Emphasis is also placed on current and prospective applications of the mentioned knowledge. The main app	lication area is the	audiovisua
technology related	to human perception, but the direct employment of the acquired knowledge also includes the areas of multimedia technology, control	systems, automatic	on, robotics
safety and securi	ty technology, bioinspired systems, etc. At the same time, students gain a general overview of information processing in biological sy	stems. A separate	part is the
objectification of a	audiovisual information perceived quality, i.e., Quality of Experience (QoE). The course is intended for students of master's degree in	echnical fields. The	e exercises
will be devoted to	fundamental experiments to determine the most important characteristics of HAS and HVS, including computational models and sin	nulation of vision ar	nd hearing
	processes		

E2M31DSPA		/ / N	6
	Digital Signal Processing overview about basic methods of digital signal processing and their applications (examples from speech and biological signal processin	Z,ZK	1
	characteristics in time and frequency domain, Fourier transform, fast algorithms for DFT computation, introduction to digital filter design,		-
systems, signar c	frequency domain, decimation and interpolation and their usage in filter banks, basics of LPC analysis. Further details can be found a	-	in time and
	href=http://noel.feld.cvut.cz/vyu/be2m31dspa>http://noel.feld.cvut.cz/vyu/be2m31dspa>	ιι αιι,α	
E4M33MPV		Z,ZK	6
	· · · · · · · · · · · · · · · · · · ·		1
	selected computer vision problems: search for correspondences between images via interest point detection, description and matching	-	-
-	d segmentation of objects in images and videos, image retrieval from large databases and tracking of objects in video sequences. This c	-	
nter-university pr	rogramme prg.ai Minor. It pools the best of AI education in Prague to provide students with a deeper and broader insight into the field of	artificiai inteilig	ence. Mor
	information is available at https://prg.ai/minor.		
BE4M33PAL	Advanced Algorithms	Z,ZK	6
Basic	graph algorithms and graph representation. Combinatorial algorithms. Application of formal languages theory in computer science - pat	tern matching.	
E4M33SSU	Statistical Machine Learning	Z,ZK	6
he aim of statisti	ical machine learning is to develop systems (models and algorithms) for learning to solve tasks given a set of examples and some prior	knowledge abo	ut the tasl
is includes typic	al tasks in speech and image recognition. The course has the following two main objectives 1. to present fundamental learning concept:	s such as risk n	ninimisatio
ximum likelihoo	d estimation and Bayesian learning including their theoretical aspects, 2. to consider important state-of-the-art models for classification	and regression	and to sh
	how they can be learned by those concepts.	· ·	
BE4M35KO	Combinatorial Optimization	Z,ZK	6
	·	•	1
-	vithe problems and algorithms of combinatorial optimization (often called discrete optimization; there is a strong overlap with the term ope		-
	inear algebra, graph theory, and basics of optimization, we show optimization techniques based on graphs, integer linear programming,		
igorithms and s	tate space search methods. We focus on application of optimization in stores, ground transportation, flight transportation, logistics, plan	ning of human	resources
	scheduling in production lines, message routing, scheduling in parallel computers.		
4M36MBG	Molecular Biology and Genetics	Z,ZK	6
4M36SAN	Statistical data analysis	Z,ZK	6
	on the skills developed in introductory statistics courses. It is practically oriented and gives an introduction to applied statistics. It mainly a	•	1
	elling, i.e., the methods that help to understand, interpret, visualize and model potentially high-dimensional data. It can be seen as a pur		
,	machine learning and data mining courses.	,	
4142661411	· · · · · · · · · · · · · · · · · · ·	Z.ZK	6
E4M36SMU		,	6
	sists of four parts. The first part of the course will explain methods through which an intelligent agent can learn by interacting with its en		
	earning. This will include deep reinforcement learning. The second part focuses on Bayesian networks, specifically methods for inference		
ındamental topi	ics from natural language learning, starting from the basics and ending with state-of-the-art architectures such as transformer. Finally, th	e last part will	provide a
	introduction to several topics from the computational learning theory, including the online and batch learning settings.		
EAM02BIO	Biosensors	Z,ZK	6
		∠,∠バ	
	uces the physical, electronic, biological principles of biosensors and provides information on past, present and future technologies. Vario		
s course introdu		us mechanism	s and ser
s course introdu acepts for specif	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us	us mechanism e of modern na	s and ser
s course introdu cepts for specif	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us ls in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. W	us mechanism e of modern na	s and ser
s course introdu acepts for specif and nanomateria	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us ls in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.	us mechanisme e of modern na e will also disc	s and sen nostructu uss curre
s course introduncepts for specifind nanomateria  EAM02FPT	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us ls in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy	us mechanism e of modern na /e will also disc Z,ZK	s and sen inostructu uss curre
s course introduncepts for specifind nanomateria  EAM02FPT his course, studi	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is described in the seven lectures.	us mechanisme e of modern na e will also disc Z,ZK evoted to electr	s and sen
s course introdu ncepts for specifind nanomateria EAM02FPT his course, stud- methods, therap	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is dependent of the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures.	us mechanism e of modern na e will also disc Z,ZK evoted to electronds (repetitive tr	s and ser
s course introducepts for specifind nanomateria  EAM02FPT his course, studinethods, therap gnetic stimulatio	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is dependently ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the standard process of the problems of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the standard process of the problems of the problems of the brain - tDCS and electroconvulsive therapy - ECT) are discussed.	us mechanisme of modern na de will also disconstitution   Z,ZK evoted to electrous (repetitive tracecond half of the modern name of the name of the modern name of the modern name of the name of th	s and ser
s course introducepts for specified nanomateria  EAM02FPT his course, studinethods, therapgnetic stimulatic atten	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the use is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy  ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the story is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radio	us mechanisme of modern na de will also discended to electron de (repetitive tracecond half of the otherapy, etc.).	s and ser inostructures currently 6 cotherape anscrania he semes
EAM02FPT is course, studenthods, therap gnetic stimulatio atten EAM17EMC	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the use is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the storion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radio Introduction to Electromagnetic Compatibility	us mechanisme of modern na de will also disconstitution Z,ZK evoted to electric des (repetitive tracecond half of the therapy, etc.).  Z,ZK	s and ser inostructures curre 6 crotherape anscrania he seme:
EAM02FPT is course, studenthods, therap gnetic stimulatio atten EAM17EMC	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the use is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy  ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the story is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radio	us mechanisme of modern na de will also disconstitution Z,ZK evoted to electric des (repetitive tracecond half of the therapy, etc.).  Z,ZK	s and ser inostructures curre 6 crotherape anscrania he seme:
EAM02FPT is course, studenthods, therap gnetic stimulatio atten EAM17EMC	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the use is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the storion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radio Introduction to Electromagnetic Compatibility	us mechanisme of modern na de will also disconstitution Z,ZK evoted to electric des (repetitive tracecond half of the therapy, etc.).  Z,ZK	s and ser inostructures curre 6 crotherape anscrania he seme:
EAM02FPT inis course, studenthods, therap gnetic stimulatio atten EAM17EMC he course dwel	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the use is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy  ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the store is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic introduction to Electromagnetic Compatibility  Introduction to Electromagnetic Compatibility  Ils on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electrocal engineering.	us mechanisme of modern nave will also disconsisted to electrical disconsisted to electrical disconsisted and the second half of the tother apy, etc.).  Z,ZK etromagnetic interpretations.	s and ser inostructi uss curre  6 rotherape anscrania he semes
EAM02FPT is course, study nethods, therap gnetic stimulation EAM17EMC EAM17EPM	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the use is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the stiton is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Ils on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electromagnetic compatibility - election susceptibility and testing methods. The course leads to gain professional skills in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine	us mechanisme of modern nave will also disconsisted to electrons of the second half of th	s and sei
EAM17EPM expenses course introduce course for specific definition and the course and the course dwell and the cour	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy  ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the stion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radio Introduction to Electromagnetic Compatibility  Illis on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electromagnetic compatibility - electromagnetic professional skills in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  nesse lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overvient of the position of p	us mechanisme of modern nave will also disconsisted to electric discons	s and ser
EAM02FPT at course, studenethods, therapognetic stimulation EAM17EMC be course dwel	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy  ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the stion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radional introduction to Electromagnetic Compatibility  Illis on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electromagnetic compatibility - electromagnetic professional skills in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  nesse lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overview of limits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological systems, microwave hyperthermia, measurement of dielectric parameters of biological systems, microwave hyperthermia, measurement of dielectric parameters of biological systems, microwave hyperthermia, measurement of dielectric parameters of biological systems.	us mechanisme of modern nave will also disconsisted to electric discons	s and ser
EAM02FPT ais course, studenethods, theraporation attentions EAM17EMC be course dwelthous authority and the course dwelthous and the course dwelthous authority authority and the course dwelthous authority authority authority and the course dwelthous authority au	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy  ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation methods on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the stion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Illis on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  electures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overvie y limits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological phone users, magnetic resonance imaging, interaction of optical radiation with biological tissue.	us mechanisme e of modern na /e will also disc Z,ZK evoted to electrods (repetitive tracecond half of the other apy, etc.).  Z,ZK etromagnetic into Z,ZK w of microwave gical tissues, E	s and ser inostructures curre  6 cotherape anscrania he semes 6 derference 6 applicati 6M expos
course introducepts for specific dinanomateria  EAMO2FPT is course, studiethods, therapinetic stimulation attention.  EAM17EMC ne course dwell  EAM17EPM major aim of the nedicine. Safety  EAM31ADA	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy  ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is deutic ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the store is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radice)  Introduction to Electromagnetic Compatibility  Ils on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electromagnetic compatibility - electromagnetic representations of Electromagnetic Fields in Medicine  Applications of Electromagnetic Fields in Medicine  leese lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overview of mobile phone users, magnetic resonance imaging, interaction of optical radiation with biological tissue.  Adaptive signal processing	us mechanisme of modern nave will also disconsisted to electric discons	s and ser inostructi uss curre  6 cotherape anscrania he seme: 6 derference 6 applicati M expos
course introducepts for specific dinanomateria  EAM02FPT ais course, studinethods, therapy gnetic stimulation attentions.  EAM17EMC he course dwelth ais course discourse for the course discourse provided and the course discourse provided and the course provided and the	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy  ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation methods on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the stion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic lateral	us mechanisme of modern nave will also disconsisted to electric disconsisted from the second half of the sec	s and ser nostructi uss curre  6 cotherape anscrania he semes derference 6 applicati 6 M expos
course introducepts for specific dinanomateria  EAM02FPT ais course, studinethods, therapy gnetic stimulation attentions.  EAM17EMC he course dwelth ais course discourse for the course discourse provided and the course discourse provided and the course provided and the	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy  ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is deutic ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the store is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radice)  Introduction to Electromagnetic Compatibility  Ils on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electromagnetic compatibility - electromagnetic representations of Electromagnetic Fields in Medicine  Applications of Electromagnetic Fields in Medicine  leese lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overview of mobile phone users, magnetic resonance imaging, interaction of optical radiation with biological tissue.  Adaptive signal processing	us mechanisme of modern nave will also disconsisted to electric disconsisted from the second half of the sec	s and ser nostructi uss curre  6 cotherape anscrania he semes derference 6 applicati 6 M expos
course introducepts for specific dinanomateria  EAM02FPT ais course, studinethods, therapy gnetic stimulation attentions.  EAM17EMC he course dwelth ais course discourse for the course discourse provided and the course discourse provided and the course provided and the	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy  ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation methods on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the stion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic lateral	us mechanisme of modern nave will also disconsisted to electric disconsisted from the second half of the sec	s and ser nostructi uss curre  6 cotherape anscrania he semes derference 6 applicati 6 M expos
course introducepts for specific dinanomateria  EAM02FPT ais course, studinethods, therapy gnetic stimulation attentions.  EAM17EMC he course dwell  EAM17EPM major aim of the nedicine. Safety  EAM31ADA his course providiction, includir	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy  ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the stion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radio Introduction to Electromagnetic Compatibility  Illis on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  ease lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overviex of mobile phone users, magnetic resonance imaging, interaction of optical radiation with biological tissue.  Adaptive signal processing  ides a basic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algorithms for adaptive beamforming techniques.	us mechanisme of modern nave will also disconsisted to electric discondination of the therapy, etc.).  Z,ZK evoted to electric discondination of the therapy, etc.).  Z,ZK etromagnetic into the therapy of the therapy	s and ser nostructi uss curre  6 rotherape anscrania he semes  6 terference 6 applicati M expos  6 mation and
EAM31ADA a course introducepts for specific dinanomateria  EAM02FPT ais course, studinethods, therapymetic stimulatic attento	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.    Physics for Diagnostics and Therapy	us mechanisme of modern nave will also disconsisted to electric discondination of the therapy, etc.).  Z,ZK evoted to electric discondination of the therapy, etc.).  Z,ZK etromagnetic interpretable of the therapy etc.).	s and ser sinostructivus curre 6 6 cotherape anscrania he semes 6 derference 6 application and a application and a signals. La
EAM31ADA is course introducted for specific depts for specific depts for specific depts for specific depts for specific course, studinethods, therapy pretic stimulation attento attento depts for specific stimulation attento depts for specific	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy  ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is desuite ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation methods on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the stion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Illis on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  esee lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overvie will limits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological governables are resonance imaging, interaction of optical radiation with biological tissue.  Adaptive signal processing idea a basic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algorithms for adaptive beamforming techniques.  Applied optoelectronics in medicine  Biological signals	us mechanisme e of modern na /e will also disconsiste will also disconsiste will also disconsiste with a consistency of the econd half of	s and ser sinostructivus curre 6 6 cotherape anscrania he semes 6 derference 6 application and a application and a signals. La
course introduce the course introduce the course for specific discourse, studies thous, theraponetic stimulation attento the course dwell and the course discourse providiction, including the course is focurse in the course in the course in the course is focurse in the course in the course in the course is focurse in the course in	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy  ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is deventic ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the storn is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Ils on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electromagnetic compatibility - electromagnetic fields in Medicine  Applications of Electromagnetic Fields in Medicine  Rese lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overviey limits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological abasic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algorithms for adaptive decorrelation and separation of multiple decorrelation and practical applications. Next, it describes the algorithms for adaptive decorrelation and separation of multiple decorrelation and practical applications. Next, it describes the algorithms for adapti	us mechanisme e of modern na /e will also disconsiste will also disconsiste will also disconsiste with a constant and a constant also disconsiste with a constant also disconsistent also di	s and seignostructivus curre  6 cotherape anscrania he seme:  6 a applicat EM expos  6 mation a aignals. Land 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
EAM02FPT also course introduce the course of	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation methods on of the brain - rTMs, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the stion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Illis on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  lease lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overview of individual interview of Electromagnetic Fields in Medicine  lease lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overview of mobile phone users, magnetic resonance imaging, interaction of optical radiation with biological tissue.  Adaptive signal processing  Idea a basic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algority analysis, implementation and practical applications. Next, it describes the algorithms for adaptive decorrelation and separation of multiple decorrelation and practical applications. Next, it describes the algorithms for adap	us mechanisme of modern nave will also disconsisted to electrost (repetitive transporter).  Z,ZK evoted to electrost (repetitive transporter).  Z,ZK etromagnetic information of the electron	s and see anostructivus curre 6 6 6 e applicat 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
course introduce the process of the course o	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected utrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the stion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Illustron to Electromagnetic Compatibility  Illustron to Electromagnetic Compatibility  Illustron to Electromagnetic Fields in Medicine  Electures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overview of limits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological systems, magnetic resonance imaging, interaction of optical radiation with biological tissue.  Adaptive signal processing  ides a basic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algorithms for adaptive beamforming techniques.  Applied optoelectronics in medicine  Biological signals  sed to the native and evoked biosignals used in clinical medicine and current methods of capturing, processing, recording and evaluation apportant biological signals, the students are introduced with their genesis, and nature and physiological characteristics	us mechanisme of modern nave will also disconsisted to electrost (repetitive transporter).  Z,ZK evoted to electrost (repetitive transporter).  Z,ZK etromagnetic information of the electron	s and seignostructivuss curre  6 rotherape anscranishe seme  6 terference  6 applicate M expose  6 mation a aignals. L
course introduce the process of the course o	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected that sound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the stition is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Illusion problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electromagnetic compatibility and testing methods. The course leads to gain professional skills in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  Rese lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overviex plimits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological systems are senting and processing interaction of optical radiation with biological tissue.  Adaptive signal processing  ides a basic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algorithms for filtering, decorrelation, separation and beamforming techniques.	us mechanisme of modern nave will also disconsisted to electrost (repetitive transporter).  Z,ZK evoted to electrost (repetitive transporter).  Z,ZK etromagnetic information of the electrost (repetitive transporter).  Z,ZK etromagnetic information of the electrost (repetitive transporter).  Z,ZK etromagnetic information of the electrost (repetitive transporter).	s and seignostructivuss curre  6 rotherape anscranithe seme  6 terference  6 applicate M expose  6 and frequeruction our signals.
EAM17EPM major aim of the nedicine. Safety EAM31ADA his course providiction, includir EAM31BSG course is focu- domains. For in- ruments. Stude	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected that sound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the stition is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Illusion problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electromagnetic compatibility and testing methods. The course leads to gain professional skills in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  Rese lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overviex plimits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological systems are senting and processing interaction of optical radiation with biological tissue.  Adaptive signal processing  ides a basic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algorithms for filtering, decorrelation, separation and beamforming techniques.	us mechanisme of modern nave will also disconsisted to electrost (repetitive transporter).  Z,ZK evoted to electrost (repetitive transporter).  Z,ZK etromagnetic information of the electron	s and ser sinostructurus curre 6 contherape anscrania he semes 6 derference 6 applicati 6 mation an ignals. La 6 derfeque ruction of al signals
EAM31AOL EAM31BSG course is focured to course introduct the course of th	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected that sound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the stition is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Illusion problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electromagnetic compatibility and testing methods. The course leads to gain professional skills in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  Rese lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overviex plimits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological systems are senting and processing interaction of optical radiation with biological tissue.  Adaptive signal processing  ides a basic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algorithms for filtering, decorrelation, separation and beamforming techniques.	us mechanisme e of modern na /e will also disconsiste e will also disconsiste	s and ser sinostructivus curre 6 6 contherape anscrania he seme: 6 derference 6 e applicati 6 e applicati 6 e fond freque ruction of al signals.
EAM31ADA major aim of the medicine. Safety EAM31ADA EAM31BSG e course is focus domains. For in ruments. Stude	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected under the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected under the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected under the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected under the problems of problems of problems of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the store is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic in problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electromagnetic compatibility - election susceptibility and testing methods. The course leads to gain professional skills in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  electures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overview of mobile phone users, magnetic resonance imaging, interaction of optical radiation with biological tissue.  Adaptive signal processing  ides a basic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algorithms for adaptive decorrelation and separation of multiple processing in medicine  Biological signals  sed to the native an	us mechanisme e of modern na /e will also disconsideration of the will als	s and ser sinostructurus curre 6 6 contherape anscrania he semes 6 derference 6 applicati 6 M expos 6 mation an ignals. La 6 6 d freque ruction of al signals 6 d diagnos
EAM31ADA e major aim of the medicine. Safety  EAM31ADA e M31ADA e documents. Safety  EAM31ADA e major aim of the medicine. Safety  EAM31ADA e major aim of the medicine. Safety  EAM31ADA e documents. Safety  EAM31ADA e course is focus domains. For in ruments. Stude  EAM31LET dents will study and therapeutica	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is detected using a control of the brain of	us mechanisme e of modern na /e will also discomplete of modern na /e will also discomplete of will also discomplete of electric discomplete of electr	s and ser sinostructurus curre 6 6 contherape anscrania he semes 6 derference 6 applicati 6 mation an ignals. La 6 6 d freque ruction of al signals 6 d diagnosiand critical and signals 6 diagnosiand critical and signals 2 diagnosiand
EAM31ADA major aim of the medicine. Safety EAM31ADA ais course providiction, includir EAM31ADL EAM31BSG e course is focu- domains. For in ruments. Stude EAM31LET dents will study and therapeutical and therapeutical and therapeutical and therapeutical	ic applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is deutic ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method nor of the brain - rTMS, transcranial electrical stimulation of the brain - tDCs and electroconvulsive therapy - ECT) are discussed. In the ston is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic ion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic in increase).  Introduction to Electromagnetic Compatibility  Illis on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electroal engineering.  Applications of Electromagnetic Fields in Medicine  electures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overvie y limits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological solutions are provided and provid	us mechanisme e of modern na /e will also disconsideration of the will als	s and ser inostructivus curre 6 6 6 e applicati 6 e oxymet
EAM31ADA mais course introduce to specificate of the course of the course dwell of the course of the	is applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is desented ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method not of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the store it is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Is on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  Applications of Electromagnetic Fields in Medicine  elese lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overvie y limits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological modes are provided and provided provides analysis of adaptive decorrelation with biological tissue.  Adaptive signal processing  ides a basic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algorithms for adaptive decorrelation and separation of multiple provides analysis, implementation and practical applications. Next, it describes the algorithms for adaptive decorrelation and separation of multiple provides and provides and provides and pro	us mechanisme e of modern na /e will also disconsideration of the will als	s and ser inostructures currer 6 6 experimental
EAM31ADA his course is focus EAM31ADA his course providediction, includir EAM31ADA	is applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is of setutic ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electrocomvulsive therapy - ECT) are discussed. In the stion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Ils on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  ese lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overview of minimal properties of EM fields in different biological systems, including an overview of mobile phone users, magnetic resonance imaging, interaction of optical radiation with biological tissue.  Adaptive signal processing  ides a basic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algorithms for illegation and practical applications. Next, it describes the algorithms for adaptive decorrelation and separation of multiple and processing in the filter of adaptive decorrelation and separation of multiple processing and processing in medicine  Biological signals  sed to the native and evoked biosignals used in clinical medicine and are na	us mechanisme e of modern na /e will also disconsideration of the will als	s and ser inostructures currer for the semester for the s
EAM31ADA his course introduction in the medicine. Safety EAM31ADA his course provided course is focus EAM31ADA his course provided course is focus domains. For incruments. Stude EAM31LET dents will study and therapeutical calthcare, equip EAM31NPG e course will provide course will prov	is applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is deutic ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial pain stimulation method of the brain - TMS, transcranial electrical stimulation of the brain - TMS and electroconvulsive therapy - ECT) are discussed. In the stion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Is on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  assectives its to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overvie y limits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological systems, including an overvie y limits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological parameters of problems of mobile phone users, magnetic resonance imaging, interaction of optical radiation with biological tissue.  Adaptive signal processing  dies a basic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algorithms for processing in magnetic resonance imaging, interaction of optical radiation with biological signals and pr	us mechanisme e of modern na /e will also disconsideration of the will als	s and ser inostructures currer for the semestration and ser inostructures currer for the semestration and services for the services for the semestration and services for the se
EAM31ADA  The medicine. Safety  EAM31ADA  The course provided to including the medicine. Safety  EAM31ADA  The course provided to including the medicine. Safety  EAM31ADA  The medicine of the medicine. Safety  EAM31ADA  The medicine of the medicine. Safety  EAM31ADA  The medicine of the medicine of the medicine. Safety  EAM31ADA  EAM31ADA  The medicine of the medicine of the medicine of the medicine. Safety  EAM31ADA  EAM3	is applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is deutic ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial brain stimulation method on of the brain - rTMS, transcranial electrical stimulation of the brain - tDCS and electroconvulsive therapy - ECT) are discussed. In the etion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Ils on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electromagnetic compatibility and testing methods. The course leads to gain professional skills in the field of electrorial engineering.  Applications of Electromagnetic Fields in Medicine  Applications of Electromagnetic Fields in Medicine  ese lectures is to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overviey in limits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological systems, microwave hyperthermia, measurement of dielectric parameters of biological solutions and practical applications. Next, it describes the algorithms for adaptive decorrelation and separation of multiple as a basic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algorithms for adaptive decorrelation and separation of multiple appli	us mechanisme e of modern na /e will also disconsideration will also discon	s and ser sinostructures curred for the semestance and series and critical series and critical series and critical series and series
EAM31ADA and course in troduction in the course of the course dwelver in the course in	is applications (such as detection of glucose, urea, proteins, cells, bacteria, etc.) are explained. In addition, the course introduces the us is in biosensors to achieve reliable and sensitive devices for diagnosis at the point of care, in food safety or environmental monitoring. We challenges and future perspectives for various applications of biosensors.  Physics for Diagnostics and Therapy ents will be introduced to the problems of locomotive organs diseases and musculoskeletal pain in the first seven lectures. Great space is deutic ultrasound and phototherapy. Furthermore, advanced neurorehabilitation methods, especially transcranial pain stimulation method of the brain - TMS, transcranial electrical stimulation of the brain - TMS and electroconvulsive therapy - ECT) are discussed. In the stion is paid to the possibilities of using ionizing electromagnetic fields in medical diagnostics and therapy (eg X-ray, proton therapy, radic Introduction to Electromagnetic Compatibility  Is on problems of electromagnetic compatibility. Students obtain the basic knowledges in the field of electrical engineering.  Applications of Electromagnetic Fields in Medicine  assectives its to give to students a basic overview of biophysical aspects of EM fields in different biological systems, including an overvie y limits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological systems, including an overvie y limits, clinical usage of EM field effects on biological systems, microwave hyperthermia, measurement of dielectric parameters of biological parameters of problems of mobile phone users, magnetic resonance imaging, interaction of optical radiation with biological tissue.  Adaptive signal processing  dies a basic discourse on adaptive algorithms for filtering, decorrelation, separation and beamforming. The course explains adaptive algorithms for processing in magnetic resonance imaging, interaction of optical radiation with biological signals and pr	us mechanisme e of modern na /e will also disconsideration will also discon	s and set inostructivus curre 6 6 ortherape anscrania he seme:  6 applicate M expose 6 mation a signals. List of 6 diagnos and criticate oxymet 6 ortherape 6 ortherape 6 ortherape 7 oxymet 6 ortherape 7 oxymet

BEAM31ZAS	Analog Signal Processing	Z.ZK	6
	th analog input-output blocks for signal transmission and processing. They discussed circuit solution of amplifiers and filters, including the	,	s, simulation
and measuremen	t. Students learn the circuit concepts and possibilities for solving the contemporary analogue structures. The second part of the cour	se describes the d	esign and
implementa	tion of analog filters, including discrete-time circuits. The conclusion is devoted to the possibilities of computer optimization of electrons.	onic circuits and filt	ers.
BEAM33MOS	Modeling and Simulation	Z,ZK	6
The modelling te	chniques being frequently used in biomedical engineering and corresponding software tools: Matlab-Simulink, Modelica. Techniques	of modelling and p	rocesses
associated with t	hem. Types of models, continuous and discrete time models, linear and nonlinear models with lumped parameters, models and their	implementation in	program
environment. Forma	alization and model creation for a selected system, its identification, verification and interpretation. Equilibrium states (homeostasis) a	and their inquiry by	simulation.
Models of open and	d feedback systems. Use of fuzzy-neuronal models in biomedicine. Models of separate systems and whole constellations being defin	ned in biomedical e	ngineering.
	Models of cellular and physiological control, population models. Application of models for artificial organs production.		
BEAM33NIN	Neuroinformatics	Z,ZK	6
The Neuroinformati	cs Course concentrates on modelling of neurons, stochastic learning on cellular level, information coding and decoding in brain and sir	ngle unit processing	g. Examples
	from clinical practices are provided throughout the course. The labs focus on signal neuron analysis from human and animal b	rain.	
BEAM33ZMO	Medical Image Processing	Z,ZK	6
This subject describ	es algorithms for digital image processing of 2D and 3D images, with emphasis on biomedical applications. We shall therefore conce	entrate on the mos	t often used
techniques in me	dical image processing: segmentation, registration, and classification. The methods will be illustrated by a range of examples on me	dical data. The stu	dents will
implement some of	the algorithms during the practice sessions. Because of the very large overlap between courses A6M33ZMO and A4M33ZMO, the control of the cont	courses will be tau	ght together
	this year.		
BEAM33ZSL	Medical Imaging Systems	Z,ZK	6
The course covers	he principles, design and properties of currently used medical imaging devices. We shall deal with 2D microscopic, X-ray and ultrasou	ind imaging systen	ns, including
advanced topics sur	ch as Doppler ultrasound. We will also study tomographic (3D) imaging systems: computed tomography (CT), magnetic resonance ima	ıging (MRI) includir	g functional
	MRI (fMRI) and nuclear imaging methods (PET,SPECT). For more information see https://cw.fel.cvut.cz/wiki/courses/zsl		
BEAM36BIN	Bioinformatics		
	Diolinormatics	Z,ZK	6
BEAM38KLS	Construction of Medical Systems	Z,ZK Z,ZK	6
		Z,ZK	6
General principles	Construction of Medical Systems	Z,ZK operation of medic	6 cal electrical
General principles	Construction of Medical Systems and design and construction of medical devices and systems. Technical standards and requirements for the design, construction and	Z,ZK operation of medic	6 cal electrical
General principles	Construction of Medical Systems and design and construction of medical devices and systems. Technical standards and requirements for the design, construction and design and construction and design and construction and design and construction classes of instruments. Electromagnetic Compatibility of Medical Devices. Modern component base. Design and construction	Z,ZK operation of medic	6 cal electrical
General principles a appliances. Class	Construction of Medical Systems and design and construction of medical devices and systems. Technical standards and requirements for the design, construction and iffication classes of instruments. Electromagnetic Compatibility of Medical Devices. Modern component base. Design and constructio devices.	Z,ZK operation of medic on of basic blocks o	6 cal electrical of medical
General principles a appliances. Class	Construction of Medical Systems and design and construction of medical devices and systems. Technical standards and requirements for the design, construction and iffication classes of instruments. Electromagnetic Compatibility of Medical Devices. Modern component base. Design and constructio devices.  Safety in Electrical Engineering for a master's degree	Z,ZK operation of medic on of basic blocks o	6 cal electrical of medical
General principles a appliances. Class	Construction of Medical Systems and design and construction of medical devices and systems. Technical standards and requirements for the design, construction and iffication classes of instruments. Electromagnetic Compatibility of Medical Devices. Modern component base. Design and construction devices.  Safety in Electrical Engineering for a master's degree des for students of all programs periodic training guidelines for health and occupational safety and gives knowledge of electrical haza	Z,ZK operation of medic on of basic blocks o	6 cal electrical of medical
General principles a appliances. Class  BEEZM The course provi	Construction of Medical Systems and design and construction of medical devices and systems. Technical standards and requirements for the design, construction and iffication classes of instruments. Electromagnetic Compatibility of Medical Devices. Modern component base. Design and construction devices.  Safety in Electrical Engineering for a master's degree des for students of all programs periodic training guidelines for health and occupational safety and gives knowledge of electrical haza Students receive indispensable qualification according to the current Directive of the Dean.	Z,ZK operation of medic on of basic blocks of Z ard of given branch	6 cal electrical of medical 0 of study.

For updated information see <a href="http://bilakniha.cvut.cz/en/f3.html">http://bilakniha.cvut.cz/en/f3.html</a> Generated: day 2024-05-18, time 23:06.