

Topical Problem in Biomedical Engineering

Course Overview

Level of study	Master Degree / Graduate
Workload	ECTS: 6 Total Hours: 216 Contact Hours: 64 <ul style="list-style-type: none"> • Lectures: 0 • Labs: • Seminars: 64
Course Code	
Semester	Winter/Summer
Prerequisites	—
Course Objectives	<p>The course is focused on prospective technologies and the newest achievements in biomedical engineering as well as on the ethical issues of biomedical inventions.</p> <p>Objectives in the area of subject specific education</p> <ul style="list-style-type: none"> • The student will have knowledge in perspectives and actual level of biomedical research. • The student will master communication skills along with ability to perform effectively in multi-language environment. • The student will develop ability to analyze scientific and technical information, to prepare written materials (reports, scientific papers, short messages). • The student will improve effective presentation and scientific discussion skills. <p>Objectives in the area of general education</p> <ul style="list-style-type: none"> • The student will improve skills of individual and team working, including international cooperation. <p>Objectives in the area of personal development</p> <ul style="list-style-type: none"> • The student will be prepared for further learning, self-education and constant professional growth.
Learning Outcomes	<p>Having successfully completed this module, the student will be able to:</p> <ul style="list-style-type: none"> • Perform independent analysis and evaluation of development trends in selected areas in biomedical engineering. • Formulate and solve tasks of scientific research in accordance with trends in biomedical research. • Develop theoretical and experimental methods to solve scientific problems. • Process and analyze scientific and technical information. • Present and defend results of scientific and engineering activities.
Syllabus	<ul style="list-style-type: none"> • Basic principles of human-hardware interaction

	<ul style="list-style-type: none"> • Implantable devices, technical and ethical issues • Life support systems, technical and ethical issues • Cell technologies, genetic manipulation, artificial organisms, technical and ethical issues
Labs	—
Projects	—
Assessment	Credit Test (Pass/Fail)
Resources	<p><u>Textbooks:</u></p> <ol style="list-style-type: none"> 1. <u>Introduction to Professional Communication. Course Book, Work Book.</u> E.N.Suntzova, E.E.Velichko [2008]. TPU 2. <u>Everyday Technical English.</u> [2003]. Longman 3. <u>Oxford English for Electronics. Course Book. Teacher's Book.</u> [2006].OUP 4. <u>Computational methods in biophysics, biomaterials, biotechnology and medical systems [Электронный ресурс] : Algorithm Development, Mathematical Analysis, and Diagnostics .</u> — 38 Chapters. — Berlin: Springer US, 2003 5. <u>Biomaterials and Tissue Engineering / edited by D. Shi.</u> — Berlin: Springer Verlag, 2004. — 246 p 6. <u>Professional English in Use ICT.</u> R.Esteras, Elena M. Fabre [2007] OUP 7. <u>Jordan, R. R. English for Academic Purposes : A guide and resource book for teachers / R. R. Jordan.</u> — 7th ed. — Cambridge: Cambridge University Press, 2005. — 404 p. 9. <u>English for Academic Purposes : Teacher's Book / K. Cox, D. Hill.</u> — Frenchs Forest: Pearson Longman, 2004. — 256 p. <p><u>Online materials:</u></p> <ol style="list-style-type: none"> 1. <u>BENG 100: FRONTIERS OF BIOMEDICAL ENGINEERING,</u> access through http://oyc.yale.edu/biomedical-engineering/beng-100. 2. <u>Introduction to Bioengineering (BE.010J)</u> access through http://ocw.mit.edu/courses/biological-engineering/20-010j-introduction-to-bioengineering-be-010j-spring-2006/videos/
Instructors	Konstantin Brazovskii http://portal.tpu.ru:7777/SHARED/m/MBC