International Polytechnic SUMMER & WINTER SCHOOLS

POLYTECH Peter the Great St.Petersburg Polytechnic University

Space Technologies

Version **Effective from (date of when the course was developed)**	2017-03

ECTS Credits	4
Level/Year	3
Teaching (contact) hours	54
Total learner managed hours (incl. self-work)	126
Total hours of student learning	180

Pre-requisites	Physics (electromagnetic theory), Radio physics (basics), Communication and signal processing (basics)
Co-requisites	None
Alignment to graduate profiles	Basic knowledge of physics. At least 3 years of University level studies (physics-connected directions) Fluent English
Course aim	The program aims to provide advanced techniques of space engineering and understanding the core physics principles related to space exploration. Space industry problems are also considered during the program in addition to technology topics.
Indicative Course content	• Theoretical astrophysics, • Space technologies basics, • Practical skills on signal processing, • Satellite design, • Space engineering, • Electronics and nanomaterials for space applications.

LEARNING OUTCOMES

On successful completion of this course students will be able to:	
1	Work in satellites engineering field,
2	Make calculations for space communication techniques,
3	Analise space hardware and equipment,
4	Study advanced astronomy,
5	Plan nanosatellite mission

ASSESSMENTS

Basis of assessment	Achievement based assessment		
Methods of assessment	**Learning Outcomes**	**Pass criteria (Minimum)**	**% Weightings**
Final project presentation	Max score 80	40	50
Portfolio – summative of practices	Max score 20	10	50

REQUIREMENTS FOR SUCCESSFUL COURSE COMPLETION

Requirements	Attend at least half lectures and practices. Successfully present final project

RESULTS

Assessment results	Results for assessments are given in points marks

Course results	Students will learn techniques of space engineering and the core physics principles related to space exploration. Space industry problems are also considered during the program in addition to technology topics. The theoretical courses cover astrophysics, space technology and physics. Students will train their practical skills during an interactive business simulation workshop.

LEARNING AND TEACHING

Learning and teaching approaches	Active learning, Collaborative learning, Problem-based learning, Interdisciplinary learning
Learning and teaching resources	Textbooks, journals and library resources; use of Internet; computer software Software requirements: • MS Teams (free access will be provided for all students), • MATLAB, • Microsoft Office 2007 or newer, alternative: LibreOffice.
Learner managed activities	Completion of course work, set assignments Reading of course materials Study group work Preparation for classes Practicing relevant skills/methods/techniques Self-evaluation of course work Gathering relevant contextual information/ issues/ideas to build knowledge of the subject