

Course Unit Descriptor

Study Programme: Physics			
Course Unit Title: Plasma sources and experimental techniques			
Course Unit Code: FD18IPTE			
Name of Lecturer(s): Full Professor Stevica Đurović			
Type and Level of Studies: PhD			
Course Status (compulsory/elective): Elective			
Semester (winter/summer): Summer			
Language of instruction: English			
Mode of course unit delivery (face-to-face/distance learning): Face-to-face			
Number of ECTS Allocated: 15			
Prerequisites:			
Course Aims: Introduction to the laboratory plasma sources and experimental techniques with using plasma sources.			
Learning Outcomes: Upon completion of the course, students should possess: - General abilities: Understanding and acquiring general physical laws in plasma state. - Subject specific abilities: Understanding the principles of various laboratory plasma sources and techniques of working with them.			
Syllabus: <i>Theory</i> The production of laboratory plasmas. Plasma heating methods. Plasma sources: wall stabilized arc, pulsed arc, theta pinch. Z - pinch. T - tube. Laser produced plasmas. Nonequilibrium plasmas. RF plasmas. Astrophysical plasmas. Fusion plasmas. Magnetic confinement. Inertial confinement. Experimental and diagnostic techniques in plasma physics. Gas systems. Electrical systems. Triggering methods. Optical systems. Radiation detectors. Spectral devices. Spectral line recording techniques. <i>Practice</i> Exercises are based on the theoretical part. Exercises on plasma sources available in a plasma physics laboratory (wall stabilized arc, T - tube)			
Required Reading: 1. R. D. Gill, Plasma physics and nuclear fusion research, Academic Press, London, (1981). 2. A. von Engel, Electric plasmas: Their nature and uses, IPS Taylor & Francis Inc. , New York (1983). 3. J. Reece Roth, Industrial plasma engineering, Institute of Physics Publishing, Bristol, (1995). 4. J. K. Wright, Shoch tubes, Methuen & CO LTD, London (1961). 5. Yu. P. Raizer, Laser-induced discharge phenomena , Consultants Bureau, New York, (1977.) 6. Electrical breackdown of gases, ed. J. M. Meek, J.D. Craggs, John Willey & Sons, New York (1978)			
Weekly Contact Hours:	Lectures: 6	Practical work: 4	
Teaching Methods: Lectures and students group work			
Knowledge Assessment (maximum of 100 points): 100			
Pre-exam obligations	points	Final exam	points

Active class participation		written exam	
Test I and Test II		oral exam	70
Preliminary exam(s)		
Seminar(s)	30		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			