Course Unit Descriptor

Study Programme: Agronomy	
Course Unit Title: Modeling of Forest Ecosystems and Climate Change	
Course Unit Code: 19 AGR163	
Name of Lecturer(s): Dejan B. Stojanović	
Type and Level of Studies: PhD	
Course Status (compulsory/elective): elective	
Semester (winter/summer): winter	
Language of instruction: English	
Mode of course unit delivery (face-to-face/distance learning): face-to-face/distance learning	
Number of ECTS Allocated: 7	
Prerequisites:	

Course Aims:

To enable students to acquire knowledge in modeling the impact of climate change on forest ecosystems, as well as the use of GIS tools and spatial statistics in that area. The emphasis will be on modeling the impact of climate change on forests using ecological niche models and process growth models. Different possibilities of using modern GIS tools in forestry will be presented. The R software environment for statistical analysis and presentation of results through practical application will be presented.

Learning Outcomes:

After completing the course, students will be familiar with a number of methodological approaches for modeling the impact of changed environmental conditions on vegetation (process models, GIS, R statistical environment) and trained for their application in forestry. In addition to impact analysis, students will gain insight into the concepts and measures of adaptation to climate change.

Syllabus:

Theory

1. Vegetation modeling in changing environmental conditions
2. Process models for predicting growth in changed climate conditions
3. Application of R statistical package in modeling
4. Application of GIS in modeling
5. Adaptations to climate change
6. Contemporary trends and perspectives of practical application.

Practice

Required Reading:

Stojanović (2018). Osnove R-a (inovativnost, zanat, jezik). Institut za nizijsko šumarstvo I životnu sredinu. 153 str.Bivand, R. S., Pebesma, E. J., & Gómez-Rubio, V. (2008): Applied spatial data analysis with R. New York: Springer.

Pretzsch, H. (2009): Forest dynamics, growth, and yield. Springer-Verlag Berlin Heidelberg.

Weekly Contact Hours: 5	Lectures: 5	Practical work:

Teaching Methods: During lectures, doctoral students will use modern visual and other teaching aids in order to acquire a theoretical basis. Doctoral students will use modern software tools and become familiar with work methods in practical work. During the semester, doctoral students will prepare a seminar paper based on the chosen topic.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	Final exam	points
Active class participation	10	written exam	
Practical work		oral exam	50
Preliminary exam(s)		…….	
Seminar(s)	40		

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.