John Paul II Catholic University of Lublin
Faculty of Philosophy

academic year 2012/2013

field of study **philosophy (course in English)**

first-cycle studies

full-time studies

Subject catalogue Set Theory				
Type:	lecture with classes			
Hours:*	winter semester	15+0	summer semester	15+15
*If a subject consists of e. g. lecture and classes, the proper hours to any classes should be given.				
ECTS:	winter semester	4	summer semester	5
Language of tuition:	English			
Method of assessment:*	winter semester	C	summer semester	E+CM
*If a subject consists of lecture and classes, the proper method of assessment to any classes should be given.				
SUBJECT SPECIFIC OBJECTIVES				
1.	Knowledge of main concepts, theorems, problems and achievements in set theory.			
2.	Knowledge of problems in foundations of mathematics and their philosophical significance.			
3.	Ability to use set-theoretical concepts.			
PREREQUISITE (KNOWLEDGE, SKILLS, COMPETENCE, OTHERS)				
1.	secondary school mathematical knowledge			
2.	knowledge of formal logic equivalent to the first-cycle course			
3.	knowledge of history of ancient and medieaval philosophy equivalent to the first-cycle course			
LEARNING OUTCOMES				**Correlation with programme learning outcomes**
Knowledge				
1.	Student know the characteristic features of the main approaches in the foundations of mathematics and problems of set theory			K_W03
2.	Student knows the main definitions and theorems in ZF set theory			K_W03
Skills				
1.	Student is able to solve the most simple problems in set theory			K_U04
2.	Student is able discuss the principles of reduction of mathematics to set theory			K_U05
3.	Student is able to reconstruct set-theoretical antinomies and discuss their resolutions			K_U05
Social Competence				
1.	Student is aware of the cultural significance of basic research			K_K05

TEACHING CONTENT (SUBJECT DESCRIPTION)				
Unification and reduction of classical mathematics to arithmetics of natural numbers. Elements of philosophy of mathematics. Classical set theory. Set-theoretical antinomies and their resolutions. ZF set theory and outline of NBG theory. Reduction of arithmetics to set theory. Infinite sets. Iterative conception of set and non-standard set theories (mereology, theory of non-well-founded sets, paraconsistent set theory).				
TEACHING METHODS*				
Lecture: traditional lecture with problem solving and discussion. **Classes:** analysis of texts, collaborative problem solving, and discussion.				
*If a subject consists of lecture and classes, the proper teaching methods to any classes should be given.				
METHODS OF LEARNING ACHIEVEMENTS ASSESSMENT*				
Lecture				
1.	exam which covers all knowledge and abilities developed during lecture and classes - with no extra lectures (90 % of assessment)			
2.	student's activity during discussion (10 % of assessment)			
Classes				
1.	6 tests on previously discussed topics, which will be anounced at least one week in advance (50 % of assessment)			
2.	knowledge of current topics (30 % of assessment)			
3.	presence and activity during classes (20 % assessment)			
GRADING SCALE*				
LEARNING OUTCOMES	**2 unsatisfactory (fail)**	**3 satisfactory**	**4 good**	**5 very good**
Knowledge	Student does not know the main approaches in the foundations of mathematics, the main versions of set theory or the main theorems in ZF set theory.	Student knows the main approaches in the foundations of mathematics, the main versions of set theory, and the main theorems in ZF set theory.	Student' knowledge covers the whole content of the lecture but may be deficient with respect to insignificant details.	Student's knowledge is sound and organised, and covers the whole content of the lecture. He or she is able to use this knowledge in problem solving.
Competence	Student is not able to solve, even with the tutor's help, simple problems in set theory, discuss the principles of reduction of mathematics to set theory, set-theoretical antinomies or their resolutions.	Student is able to solve, with the tutor's help, simple problems in set theory, discuss the principles of reduction of mathematics to set theory, set-theoretical antinomies or their resolutions.	While being unaided, student is able to solve simple problems in set theory, discuss the principles of reduction of mathematics to set theory, set-theoretical antinomies or their resolutions.	While being unaided, student is able to solve simple problems in set theory, discuss the principles of reduction of mathematics to set theory, set-theoretical antinomies or their resolutions, and also compare different approaches in foundations of mathematics and in set theory.
Social Competence	Student does not engage him- or herself in the educational process.	Student engags him- or herself in the educational process.	Student engages him- or herself in the educational process.	Student' engagement in the educational process is exemplary.
Sometimes the plus symbol or decimal is used to modify the numerical grades.				

STUDENT WORKLOAD	
Activity	Average time students typically need to complete proper learning activity*
office hours	45
homework including individual problem solving	150
self-study before exam	30
TOTAL HOURS:	225
* Workload indicates the time students typically need to complete all learning activities required to achieve the expected learning outcomes. In most cases, student workload ranges from 1,500 to 1,800 hours for an academic year, whereby **one credit corresponds to 25 to 30 hours of work**.	
TOTAL ECTS:	9

REQUIRED READING LIST	
1.	H. B. Enderson, *Elements of Set Theory* , 1977, Academic Press.

RECOMENDED READING LIST	
1.	H. B. Enderson, *Elements of Set Theory* , 1977, Academic Press.
2.	M. D. Potter, *Sets: An Introduction* , Oxford 1990, Oxford University Press.
3.	W. V. O. Quine, *Set Theory and its Logic* , 1963, Harvard University Press.
4.	R. R. Stoll, *Set Theory and Logic* , San Francisco 1963, W. H. Freeman Press.

Lublin, 20.06.2012 r.
place, date

Paweł Garbacz
signature