■ CC51 - Algebra II

GENERAL

SCHOOL	SCIENCES		
DEPARTMENT	MATHEMATICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	CC51	**SEMESTER**	E
COURSE TITLE	ALGEBRA II		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**ECTS**
Lectures	5	8

COURSE TYPE	Scientific Field
PREREQUISITE COURSES	Fundamental Notions of Mathematics Algebra I
LANGUAGE OF TEACHING AND EXAMINATIONS	Greek/English
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	http://eclass.uowm.gr/

LEARNING OUTCOMES

Learning Outcomes
Upon successful completion of the course, the students: • will know the basic concepts of the Ring-Field Theory and Fields and they will be able to do calculations with ideals and apply isomorphism theorems, • will understand the notions of prime and maximal ideals, primary decomposition, unique factorization domains and principal ideal domains,

- will understand the notions of Noetherian and Artin rings.

General Competencies

- Individual work.
- Promotion of free, creative and inductive thinking.

CONTENT OF THE COURSE

Rings and fields, integral domains, rings, homomorphisms-isomorphisms.
Fields of fractions, quotient rings, polynomial rings. Analysis of polynomials over a field, reduced polynomials.
Prime and maximal ideals.
Primary decomposition, Unique factorization domains. Principal ideal domains, Euclidean domains.
Jacobson radical. Noetherian rings. Artin Rings.

TEACHING AND LEARNING METHODS - EVALUATION

TEACHING METHOD	In the classroom.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	Use of e-class. Communication through face-to-face discussions and e-mails.
TEACHING ORGANIZATION	

Activity	**Semester Workload**
Lectures	65 hours
Projects	45 hours
Individual Study	90 hours
Course Total (25 hours per ECTS)	200 hours

STUDENT EVALUATION	Optional projects during the whole semester, with presentations. (bonus to the final grading) Written final examination 100%.

RECOMMENDED BIBLIOGRAPHY

1. M.F.Atiyah, I.G.Macdonald, Introduction to Commutative Algebra, Addison-Wesley Publishing Company, 1969. (English)
2. A.Beligiannis, An introduction to Basic Algebra, Publications Kallipos, 2015. (Greek)
3. D. Dummit, R. Foote, Abstract Algebra, 3rd edition, Wiley publications, 2004. (English)
4. J. B. Fraleigh, Introduction to Algebra, University Publications Crete, 2012. (Greek)
5. M. Holz, Repetitorium Algebra: Short Theory and Problems, Publications Symmetria, 2015. (Greek)
6. D.Varsos, D.Deriziotis, I.Emmanouil, M.Maliakas and O.Talelli, An introduction to Algebra, 3rd edition, Publications Sophia, 2011. (Greek)