

MODULE DESCRIPTION

General

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|------------|---|
| School | Geotechnical Sciences |
| Department | Forest and Natural Environment Sciences |

Module Information

| | |
|------------------|-----------------------|
| Title | Chemistry |
| Course Code | OPT.4 |
| Level of Studies | Undergraduate Studies |
| Teaching Period | Winter |
| Attendance Type | Elective |
| Prerequisites | Not applied |

| Orientation | Weekly Hours | | Year | Semester | ECTS |
|--------------------------------------|--------------|-----------------|------|----------|------|
| | Lectures | Laboratory work | | | |
| Landscape Architecture & Restoration | 2 | 1 | 3 | 5 | 3 |

Faculty Instructor

Dr. Antonios N. Papadopoulos

Type of Module

- General Foundation
- Specific Foundation / Core
- Knowledge Deepening / Consolidation

Mode of Delivery

- Face to face
- Distance learning

Digital Module availability

- E-Study Guide
- Departments Website
- E-Learning

Language

| | Teaching | Examination |
|-------|-------------------------------------|-------------------------------------|
| Greek | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

| | | |
|---------|--------------------------|--------------------------|
| English | <input type="checkbox"/> | <input type="checkbox"/> |
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Erasmus

- The course is not offered to exchange programme students

Learning Outcomes

Upon successful completion of the course students will be able to:

- Describe the structure of atoms and how molecules and ions form
- Predict the stereochemical type of chemical molecules and ions.
- Know the structure and importance of complex compounds.
- Indicate the types of intermolecular forces and how it affects the physical state of bodies and their dissolution in various solvents.
- Identify the factors that affect the speed of reactions.
- They know basic thermodynamic concepts and how they are applied to chemical systems

List of General Competences

- Apply knowledge in practice
- Work autonomously
- Work in teams
- Work in an international context
- Work in an interdisciplinary team
- Respect natural environment
- Advance free, creative and causative thinking

Module Content (Syllabus)

Basic principles of chemistry. Chemical and physicochemical bonds. Ionized and non-ionized solutions. Electrolytic solutions. Electrolysis. Redox systems. Ionic balance in acid, base, salt solutions. Colloids. Principles of analytical chemistry, methods, instruments. Organic Chemistry: introduction to alcohols, carbonic and bi-carbonic acids, carboxyl and carbonyl compounds, ethers, nitrogen compounds, carbohydrates, phenols, aromatic hydrocarbons. Sugars, fats, oils, proteins, alkaloids, hormones, enzymes, resins and gums, tannins, natural product polymers.

Educational Material Types

- Book
- Notes
- Slide presentations
- Video lectures
- Multimedia
- Interactive exercises

Other:

Use of Information and Communication Technologies

- Use of ICT in Course Teaching
- Use of ICT in Laboratory Teaching
- Use of ICT in Communication with Students
- Use of ICT in Student Assessment

Module Organization

| Course Activity | Workload (hours) |
|---|------------------|
| Lectures | 26 |
| Laboratory work | 13 |
| Field Trip/Short Individual Assignments | 11 |
| Independent Study | 25 |
| Total | 75 |

Student Assessment Methods

- Written Exam with Multiple Choice Questions
- Written Exam with Short Answer Questions
- Written Exam with Extended Answer Questions
- Written Assignment
- Report
- Oral Exams
- Laboratory Assignment

Suggested Bibliography (Eudoxus and additional bibliography)

Brown, Lemay, Bursten, Murphy, Woodward, Stoltzfus (2015). *Χημεία –Κεντρική Επιστήμη*. Εκδόσεις Τζιόλα.

D.A. Skoog, D.M. West, F.J. Holler, S.R. Crouch (2014). *Fundamentals of Analytical Chemistry, 9th ed*, Brooks/Cole Publ., Belmont (CA), 2014, pp. 2-437.

Χανιωτάκης, Ν. και Μ. Φουσκάκη (2009). *Ποσοτική Χημική Ανάλυση*. Πανεπιστημιακές Εκδόσεις Κρήτης.