
COURSE: ORGANIC CHEMISTRY 2

ACADEMIC YEAR: 2016-2017

TYPE OF EDUCATIONAL ACTIVITY: Characterizing

TEACHER: Prof. Stefano Superchi

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website:

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Language: Italian

ECTS: **6** (6 lessons)n. of hours: **48** (48 h lessons)Campus: Potenza
Dept. Science
Program:Semester: 2nd

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES*The goals of the course are:**Main educational goals (knowledge):*

- Structure synthesis and reactivity of aromatic polynuclear compounds.
- Structure synthesis and reactivity of main aromatic heterocyclic compounds.
- Structure synthesis and reactivity of carbohydrates and aminoacids.
- Peptide synthesis.
- Carbanions and aldol reactions.
- Structure synthesis and reactivity of organic poly- and difunctional compounds (mono- and di-carbonyls, α,β -unsaturated carbonyls).

The main learning outcomes will be:

- To project multi-step syntheses to obtain medium complexity organic molecules.
 - Propose possible mechanisms for simple organic transformations.
 - Foresee the reactivity of polyfunctional organic compounds.
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PRE-REQUIREMENTS*Knowledge of topics of "General and Inorganic Chemistry" and "Organic Chemistry I" courses*

- *Basic concepts on atomic structure*
 - *Basic concepts on acidity and basicity (Brønsted and Lewis)*
 - *Structure and hybridation of Carbon atom*
 - *Reactivity of main organic functional groups (alkanes, alkenes, alkynes, halides, alcohols, amines, acids and derivatives)*
 - *Mechanisms of main organic reactions (substitutions, additions, eliminations, radical reactions)*
 - *Skill in the project of simple organic syntheses*
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SYLLABUS*Lessons topics:*

- 1) *Aromaticity, Aromatic Electrophilic Substitution (SEAr), Aromatic Nucleophilic Substitution (SNAr), Diazo compounds (6h)*
 - 2) *Aromatic polycyclic compounds (6h): Synthesis and reactivity of Naphthalene, Anthracene, and Phenanthrene*
 - 3) *Heteroaromatic compounds (12h): Synthesis and reactivity of penta- and hexa-cyclic heteroaromatics. Synthesis and reactivity of Pyridine, Quinoline, Isoquinoline, Pyrrole, Furan, Thiophene, Indol.*
 - 4) *Carbohydrates (5h) Structure, synthesis and reactivity.*
 - 5) *Reactions of H-active compounds (14h): Enols and Enolates; Enols and Enolate as nucleophiles; Esters condensations (Claisen); Dicarbonyls condensations; Others enolates and carbanions: Nitroalkanes, dithians and vinyl ethers; Wittig reactions; Conjugate additions.*
 - 6) *Aminoacids and peptides (5h) Structures, synthesis and reactivity, classic and solid state peptides synthesis (Merrifield)*
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TEACHING METHODS*Theoretical lessons*

EVALUATION METHODSWritten and Oral examination together with course of Organic Chemistry Laboratory.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

- P. C. Vollhardt, N. E. Schore "Chimica Organica (3rd Ed)" Zanichelli, 2005.
 - J. Mc Murry "Chimica Organica (6th Ed)", Piccin, 2005.
 - J. Clayden, N. Greeves, S. Warren, P. Wothers "Fondamenti di Chimica Organica" Zanichelli, 2006
 - M. Sainsbury "Aromatic Chemistry" Oxford Chemistry Primers 1992
 - D. T. Davies "Aromatic Heterocyclic Chemistry" Oxford Chemistry Primers 1992
 - G. A. Pagani, A. Abbotto "Chimica Eterociclica" Piccin, 1995.
 - J. A. Joule, K. Mills "Heterocyclic Chemistry 4th Ed." Blackwell 2000
 - J. Clayden, N. Greeves, S. Warren "Organic Chemistry 2nd Ed." Oxford University Press 2012
 - F. A. Carey, R. J. Sundberg "Advanced Organic Chemistry - Part B 5th Ed" Springer 2007
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INTERACTION WITH STUDENTS*The teacher will receive the students on Monday 10.00- 12.00 and Thursday 10.00-12.00 in his room (3A128, Science Department)*

EXAMINATION SESSIONS (FORECAST)¹

21/06/2017, 18/07/2017, 19/09/2017, 24/10/2017, 21/11/2017, 19/12/2017, 16/01/2018, 06/02/2018

SEMINARS BY EXTERNAL EXPERTS YES NO

FURTHER INFORMATION

¹ Subject to possible changes: check the web site of the Teacher or the Department/School for updates.