
COURSE: Inorganic Chemistry

ACADEMIC YEAR: 2019/2020

TYPE OF EDUCATIONAL ACTIVITY: Characterizing

TEACHER: Amati Mario

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website:

phone: 0971/205935

mobile (optional):

Language: Italian (English is a possible choice, if required)

ECTS: 7 credits of
lessons, 3 credits of
laboratory activitiesn. of hours: 56 hours of
theoretical lessons, 36
hours of laboratory
activitiesCampus:Potenza
Dept./School: DiS
Program: Laurea Magistrale in
Scienze Chimiche (Master's
Degree in Chemical Science)Semester: Annual

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

The course is mainly addressed to the coordination chemistry of transition metals. Both classic and organometallic complexes are treated. The course is mainly addressed to the interpretation of properties like structure, reactivity, isomery and physical properties.

Laboratory activities are present, consisting of computational studies of properties and reactivity of metal complexes.

PRE-REQUIREMENTS

The pre-required knowledge should be acquired during the Degree Course necessary to access the Master's Degree in Chemical Science. The necessary background can be summarized as:

- Lewis' structures and VSEPR model;
 - intermediate knowledge of point symmetry;
 - basic knowledge of quantum chemistry, in particular the Hartree-Fock and the related MO-LCAO approaches;
 - kinetic law, transition state theory, Arrhenius' and Eyring's equations;
 - chemical thermodynamics.
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SYLLABUS

- Structural and physical properties of classical transition metal complexes: 24 hours of lessons;
 - stereoisomery and stereochemistry in transition metal complexes: 6 hours;
 - Redox processes in octahedral complexes: 6 hours ;
 - Substitution processes in square-planar and octahedral complexes: 10 hours;
 - organometallic transition metal complexes: properties and reactions: 10 hours;
 - computational laboratory activities: 36 hours.
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TEACHING METHODS

A total of 92 hours are divided in 56 hours of theoretical lessons and 36 hours of computational laboratory.

EVALUATION METHODS

An oral examination at the end of the course is the main evaluation method. Although of lower importance, the evaluation of the laboratory activity concurs to the final vote.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

The students receive printed materials (tables and figures) during the theoretical lessons.

Recommended text books:

Inorganic Chemistry

K. F. Purcell, J. C. Kotz

Holt-Sauders International Editions

Inorganic Chemistry

Gary L. Miessler, Donald A. Tarr

Pearson Educational International

Symmetry and Spectroscopy

D.C. Harris, M. D. Bertolucci

Dover

Chimica Inorganica

D.F. Shriver, P.W. Atkins, C.H. Langford

Zanichelli

INTERACTION WITH STUDENTS

The students can arrange appointments with the teacher for receiving additional explanations and lessons about the course topics. There are not limitations to the day and time of the appointments. The students are normally received in the room of the teacher.

EXAMINATION SESSIONS (FORECAST)¹

24/01/2020, 21/02/2020, 20/03/2020, 24/04/2020, 22/05/2020/ 19/06/2020, 24/07/2020, 18/09/2020,
23/10/2020, 20/11/2020, 18/12/2020

SEMINARS BY EXTERNAL EXPERTS YES NO

FURTHER INFORMATION

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