

Dottorato di Ricerca in Scienze Chimiche - Università degli Studi di Firenze

PROPOSTA DIDATTICA 2019

NO SSD (trasversale)

TITOLO DEL CORSO: How to improve your soft skills - how to behave in a workplace

DOCENTE: Emiliano Andreucci (HR Manager, Cromology Italia), Simona Bargiacchi (HR Specialist, Cromology Italia)

DOCENTE PROPONENTE: B. Richichi (Dipartimento di Chimica "Ugo Schiff, UNIFI")

ABSTRACT: Il programma del corso ha un duplice scopo.

- 1) Moduli 1 e 2. Dare consigli e suggerimenti utili per entrare nel mondo del lavoro, dalla preparazione del cv alla gestione del colloquio del lavoro.

Come prepararsi a questa importante sfida, quali competenze sviluppare, cosa devi necessariamente tenere in considerazione quando ti proporrà sul mercato del lavoro e cosa non puoi trascurare se vuoi restarci.

- 2) Moduli 3 e 4. Un focus specifico sulle soft skills, oggi più che mai fondamentali per affrontare uno scenario lavorativo in continuo cambiamento.

Quali sono le competenze che faranno la differenza? la comunicazione come madre di tutte le soft skills, l'importanza dell'intelligenza emotiva nelle relazioni professionali e lo sviluppo della consapevolezza di sé stesso e del proprio potenziale.

In una fase fondamentale come quella della preparazione universitaria, quanto può essere utile allo studente essere cosciente delle sue capacità e di quello che desidera per sé stesso?

il coaching è un supporto che attraverso un percorso stimola l'individuo a prendere decisioni, a mettere in pratica azioni, a sperimentare direttamente nella vita le sue potenzialità, e a costruirsi la strada che vuole percorrere.

- **Modulo 1: «HR Tips and Tricks»**

Consigli e suggerimenti utili per entrare nel mondo del lavoro (preparazione del CV e del colloquio, cosa devi sapere prima di proporti ad una azienda, cenni su soft skills).

In questo modulo parleremo di:

come costruire un CV e una lettera di presentazione

come costruire un profilo linkedin efficace (introdurremo l'argomento parlando dei numeri di linkedin, della sua crescita e dell'uso sempre più massiccio di linkedin per il recruiting)

cenni sulle soft skills in modo da conoscere quelle più richieste oggi dal mondo del lavoro e inserirle in maniera efficace nel proprio profilo e nel proprio CV

- **Modulo 2: Follow-up «HR Tips and Tricks»**

Analisi CV dei dottorandi e simulazione in aula di colloqui di selezione con debrief di gruppo.

Essendo un corso specifico per i dottorandi ed essendo il numero di partecipanti limitato, abbiamo pensato di fornire una vera e propria consulenza personalizzata ad ognuno di loro. Analizzando in

aula i vari CV e delineandone i punti di forza e i punti di miglioramento, ci proponiamo di aiutare ognuno di loro a presentarsi al meglio tramite CV e profilo LinkedIn.

Affronteremo il tema dei colloqui di lavoro, dando consigli per affrontarli al meglio.

Effettueremo simulazioni in aula di veri e propri colloqui di lavoro

Daremo suggerimenti utili su come approcciarsi al colloquio prima, durante e dopo.

- **Modulo 3: L'arte di Comunicare**

L'importanza della comunicazione come madre di tutte le soft skills. Quanto comunicare bene può fare la differenza in ambito professionale e non solo.

In questo modulo faremo una breve carrellata sulla teoria della comunicazione per poi calarla nell'ambito lavorativo al fine di far capire l'importanza della comunicazione in ambito lavorativo.

Prenderemo in analisi casi concreti in cui la applicazione della corretta comunicazione in ambito lavorativo fa la differenza.

- **Modulo 4: Sviluppare il proprio potenziale**

L'uso dell'intelligenza emotiva sul lavoro (e non solo) e la consapevolezza di sé stesso e del proprio potenziale. Come farlo attraverso il Coaching individuale.

Introduzione sull'importanza delle soft skills nell'era dell'industria 4.0

Intelligenza emotiva, cosa è? Perché è importante nel contesto lavorativo

Il potenziale individuale, come scoprirlo e massimizzarlo mediante il coaching

Periodo di Svolgimento:

mercoledì 13 marzo 2019 ore:10:30-12:30

mercoledì 20 marzo 2019 ore:10:30-12:30

mercoledì 27 marzo 2019 ore:10:30-12:30

mercoledì 3 aprile 2019 ore: 10:30-12:30

Numero minimo di studenti per l'attivazione: 2

Prova di accertamento: lettura critica e discussione di un articolo scientifico sugli argomenti del corso

Richiesta rimborso: 300 EURO

PIA: NO

SSD: CHIM/01

TITOLO DEL CORSO: Analytical chemistry as a tool to reconstruct paleoclimate

DOCENTE: Mirko Severi (Univ. Di Firenze – Dip. di Chimica “Ugo Schiff”)

ABSTRACT: Over the past years, many analytical systems were developed in order to obtain high-resolution chemical stratigraphies from ice core archives by coupling a continuous melting system with continuous or semicontinuous analytical techniques, such as continuous flow analysis (CFA), inductively coupled plasma-mass spectrometry (ICP-MS), and fast ion chromatography (FIC). The instrumental set-up and the applications of few selected markers in the field of paleoclimatology will be discussed in this course. Sulfate obtained by FIC at high spatial and temporal resolution

have been widely used to reconstruct the history of volcanic activity on the Earth for the last thousands of years. The real impact of anthropogenic activity on the remote polar environments can be investigated using selected elements (e.g. Pb isotopes, ^{239}Pu , ...) measured using these innovative analytical techniques. Besides allowing the reconstruction of past climate, these advanced analytical methods can be used to monitor the climatic changes taking place nowadays.

Periodo di Svolgimento: June 2019

Numero minimo di studenti per l'attivazione: 4

Prova di accertamento: Lettura critica e discussione di un articolo scientifico sugli argomenti del corso.

Richiesta rimborso: NO

PIA: NO

SSD: CHIM/01

TITOLO DEL CORSO: Nutrimetabolomics – analytical approaches to investigate human responses to dietary intervention

DOCENTE: Maria Ulaszewska (Fondazione Edmund Mach – San Michele all'Adige, TN)

DOCENTE PROPONENTE: M. Del Bubba

ABSTRACT: Metabolomics is the study of low-weight molecules present in biological samples such as biofluids, tissue/cellular extracts, and culture media. Metabolomics research is increasing, and at the moment, it has several applications in the food science and nutrition fields. The metabolomics sciences, applied to nutrition and in consequence also to health, have the potential to identify health biomarkers, such as early biomarkers associated with different diseases and the modifications derived from food consumption.

This course will provide students with entire workflow for metabolomics science applied to nutrition from study design to interpretation of results. Particular emphasis will be put on analytical chemistry and instrumental aspects of the work.

Periodo di Svolgimento: 4-8 March or 3-7 June 2019 (based on students)

Numero minimo di studenti per l'attivazione: 1

Prova di accertamento: Critical review and discussion of a paper regarding the topic of the course

Richiesta rimborso: 500 EURO

PIA: NO

SSD: CHIM/01

TITOLO DEL CORSO: Contaminants of emerging concern: occurrence, fate and analysis

DOCENTE: A. Cincinelli, T. Martellini (Dept. Chemistry "Ugo Schiff", Univ. Florence)

ABSTRACT: Emerging contaminants have now become a fashionable and trendy research venue. A large number of contaminants of emerging concern (CECs) poses a challenge for regulatory agencies and management practices aimed to reduce and minimize their occurrence in the environment.

I Lecture: An overview of CECs, in particular new flame retardants, microplastics and perfluorinated compounds will be presented together with current regulatory laws.

In the following lectures, case studies will be integrated to enhance interest and illustrate the complexity of the environmental toxicology issue and how situations were actually managed.

Topics covered will be:

II Lecture: Microplastics: plastic polymer chemistry, sampling, global occurrence, sources, distribution and fate of plastic in the marine environment will be presented. Identification by different analytical methods, adsorption of organic pollutants to microplastic, the role of microplastics in bioaccumulation of organic and inorganic contaminants and effects of microplastics on marine organisms will be showed.

III Lecture: The lecture will summarize current knowledge about the old (PBDEs) and new brominated flame retardants (NBFRs), focusing the attention on their uses and environmental occurrence in abiotic and biotic matrices. The lecture will set a foundation that will enable participants to learn more about new analytical methods to determine these classes of organic compounds. PBDEs versus NBFRs in waste water treatment plants and their aerobic and anaerobic biodegradation will be discussed.

IV Lecture: The lecture will provide an overview of the presence of PFCs in the environment focusing on the sources, the fate and, in particular, on human exposure via different pathways. The effects on human health will be deepened to evidence the toxic endpoints.

Periodo di Svolgimento: May or first week of September 2019 (based on students)

Numero minimo di studenti per l'attivazione: 2

Prova di accertamento: Lettura critica e discussione di un articolo scientifico sugli argomenti del corso

Richiesta rimborso: NO

PIA: NO

SSD: CHIM/02

TITOLO DEL CORSO: Cellulose nanofibers: a new building block for sustainable soft materials

DOCENTE: Gil Garnier (BioPRIA, Monash University, Australia)

DOCENTE PROPONENTE: Debora Berti

ABSTRACT:

- **Biorefinery: Challenges and opportunities**

The concept of the biorefinery has been frenetically investigated worldwide over the last decade. However, despite unprecedented research and development investments, few Biorefineries currently exist worldwide and even fewer- if any- are economically viable. This presentation will critically review the notions on which the biorefinery developments have been based.

- **Nanocellulose development and applications: from membrane to blood typing analysis**

The emerging applications of nanocellulose will be presented from a scientific and an engineering perspective. The first part of the presentation will focus on the processes and the types of nanocellulose achieved. The second will review emerging applications.

- **Paper and Low cost Biodiagnostics**

Paper diagnostics are devices made of paper and cellulosic materials to recognize and quantify biomolecules and chemical agents affecting health. There has been a rapid increase in interest for paper-based diagnostic methods in recent years. It is the objective of this presentation to analyse paper as a viable technology for producing low cost medical analysis and to delimit the range of applications and potential best suited to paper diagnostics.

- **(Bio)macromolecules at the interface**

Nanoparticles can bring a new perspective in cancer treatment. In those applications, the nanoparticles transport and diffuse best in the body as individual colloids. Clear nanocellulose fiber composites coagulated with a cationic polyacrylamide drain rapidly to form a strong film using the papermaking process.

Periodo di Svolgimento: February 2019

Numero minimo di studenti per l'attivazione: 1

Prova di accertamento: lettura critica e discussione di un articolo scientifico sugli argomenti del corso

Richiesta rimborso: NO

PIA: SI

SSD: CHIM/02

TITOLO DEL CORSO: Functional materials based on polymeric capsules, membranes and hydrogels

DOCENTE: M. Giamberini (Universitat Rovira i Virgili, Tarragona, Spain), L. Ambrosio (Dipartimento Scienze Chimiche e Tecnologie dei Materiali, Consiglio Nazionale delle Ricerche)

DOCENTE PROPONENTE: M. Bonini (Dipartimento di Chimica "Ugo Schiff, UNIFI)

ABSTRACT: The course will cover the fundamental concepts and the most recent advances in the design, formulation and characterization of polymer-based materials with applications in the fields of micro- and nano-encapsulation, controlled release of actives, biomaterials and tissue engineering. The lectures will especially focus on the physico-chemical aspects that are relevant to the functional properties of these materials when adopted in real applications, such as the self-assembly, rheological, thermal and mechanical behaviour. Part of the course will be also devoted to the description of the preparation strategies and characterization techniques that are most frequently used in this class of materials.

Periodo di Svolgimento: March-June 2019

Numero minimo di studenti per l'attivazione: 4

Prova di accertamento: final test with discussion

Richiesta rimborso: 500 EUR

PIA: NO

SSD: CHIM/03

TITOLO DEL CORSO: Gold Complexes in Cancer Chemotherapy

DOCENTE: L. Massai (Università degli Studi di Firenze – Dipartimento di Chimica “Ugo Schiff”)

ABSTRACT: A general introduction to anticancer metal complexes with specific attention for the case of cisplatin. Main chemical features of gold complexes; current status of registered gold drugs; gold(I) anticancer drugs; gold(III) anticancer drugs; mechanistic studies on cytotoxic gold compounds; biological effects of gold complexes at the cellular level; identification of the main biological targets; interaction studies.

Periodo di Svolgimento: First week of September 2019

Numero minimo di studenti per l'attivazione: 3

Prova di accertamento: Scientific article's discussion concerning the topics covered

Richiesta rimborso: NO

PIA: NO

SSD: CHIM/03

TITOLO DEL CORSO*: X-Ray Photo-electron Spectroscopy, from fundamentals to practical applications

DOCENTE: L. Poggini (Dipartimento di Chimica "Ugo Schiff, UNIFI)

ABSTRACT: The aim of the course is to provide an overview on X-Ray Photo-electron Spectroscopy (XPS) and on related techniques, introducing the basic principles the technique and highlighting the possible applications on different research topics. First, the topic of vacuum systems and different kind of instrumentation will be introduced and the basics of XPS will be explained. The various types of instrumentation commercially available will be introduced. Standard XPS technique will be then considered with particular focus on the obtainment of quantitative information from spectra through fitting procedure. Second, will be exploited the usage of more complex aspects of the spectroscopy for chemical state determination, with illustrative examples. Angle- Resolved XPS and related approaches to non-destructive depth profiling for ultra-thin films will be illustrated. Current usage of XPS and Angle Resolved XPS, for characterization and metrology of ultra-thin films, nanoparticles, polymers etc, are reviewed. Examples of use for many types of material (bio to chemical industry to semiconductors) and different types of problems (eg. surface contamination, corrosion, catalysis, failure analysis, metrology) are used to illustrate strengths and weaknesses and to help the student decide which approach is suitable for which problem.

Periodo di Svolgimento: June 2019

Numero minimo di studenti per l'attivazione: 1

Prova di accertamento: discussione di un articolo scientifico sugli argomenti del corso

Richiesta rimborso: NO

PIA: NO

SSD: CHIM/03

TITOLO DEL CORSO: Metallomics: concepts, methodologies, applications

DOCENTE: L. Messori (Dipartimento Chimica UNIFI)

ABSTRACT: Metallomics is the branch of "omics" sciences specifically aimed at the qualitative and quantitative characterization of the so called "metallome", i.e. the "the entirety of metal and metalloid species within a cell or tissue type". At first, this course will provide a general introduction to the main concepts and methodologies of metallomics. Then, its application to the fields of metal based drugs and of metal toxicology will be discussed on the ground of some relevant examples such as platinum speciation after administration of anticancer platinum drugs. The relationships of metallomics to other "omics" sciences such as proteomics and metabolomics will be critically evaluated .

Periodo di Svolgimento: June-July 2019

Numero minimo di studenti per l'attivazione: 4

Prova di accertamento: Lettura critica e discussione di un articolo scientifico

Richiesta rimborso: NO

PIA: NO

SSD: CHIM/03

TITOLO DEL CORSO*: Orbital Interactions in Chemistry

DOCENTE: F. Totti (Univ. Di Firenze – Dip. di Chimica “Ugo Schiff”)

ABSTRACT: The course will cover the construction of molecular orbital interactions through a perturbative theoretical approach. In this framework, the operative applications will cover both organic and inorganic species. The aim of the course is to make the student able to sketch the electronic structure of the species under study in order to understand and predict their reactivity and electronic properties.

Periodo di Svolgimento: February 2019

Numero minimo di studenti per l'attivazione: 1

Prova di accertamento: Colloquio: verrà discussa l'applicazione degli argomenti presentati nel corso alla propria attività di ricerca

Richiesta rimborso: NO

PIA: NO

SSD: CHIM/03

TITOLO DEL CORSO: High-resolution mass spectrometry: a powerful technique for the study of metal-protein interactions. An overview of its current applications in omic studies related to bioinorganic chemistry and metals in medicine.

DOCENTE: A. Pratesi (Univ. Di Firenze – Dip. di Chimica “Ugo Schiff”)

ABSTRACT: Mass spectrometry represents an essential tool in current biological and molecular research. It is used to characterize a wide variety of biomolecules even of extraordinary complexity such as sugars, proteins, lipids and oligonucleotides.

During this course new MS-based methodologies will be discussed for the molecular characterization of adducts formed between metallodrugs and a variety of proteins of biological relevance. Moreover, some examples will be presented concerning the elucidation of the mode of action of various metallodrugs, mostly based on Platinum, Ruthenium and Gold. As the last topic, the important role of MS in the emerging "omics" sciences such as proteomics and metabolomics will be treated in connection to Metals in Medicine mechanistic research.

Periodo di Svolgimento: March/April 2019

Numero minimo di studenti per l'attivazione: 3

Prova di accertamento: Review and discussion of a scientific paper on a topic covered by the course.

Richiesta rimborso: NO

PIA: NO

SSD: CHIM/06

TITOLO DEL CORSO: Beyond Pharma industry walls: winning system to produce quality medicines

DOCENTE: J. Montigiani, E. Tenori, B. Barro, L. Bensi (JSB Solutions)

DOCENTE PROPONENTE: A. Brandi, S. Menichetti

ABSTRACT: The aim of the course is to provide an overview of pharmaceutical industries organization (departments and roles), with a particular focus on quality system (Quality Assurance vs Quality Control). Students will be introduced to GMP practices that rule pharma industry and the importance of their application to ensure quality medicines, in addition to aftermaths in case of lack of compliance. In addition, as a case study, the course will cover the validation of cleaning processes of pharmaceuticals production equipment, detailing the purposes, the kind of testing to be performed and the expectations of the regulatory agencies.

Periodo di Svolgimento: May-June 2019

Numero minimo di studenti per l'attivazione: 5

Prova di accertamento: final test with discussion

Richiesta rimborso: 500 EURO

PIA: NO

SSD: CHIM/06

TITOLO DEL CORSO*: Chemistry for energy: recent advances in photovoltaics and solar fuels production

DOCENTE: A. Mordini (CNR – ICCOM)

ABSTRACT: The course will illustrate the state of the art of the most important technologies for energy production in the field of photovoltaics and will focus on the chemical aspects of the emerging technologies with particular reference to the third generation one (DSSC= Dye Sensitized Solar Cells). The general principles of all available technologies will be discussed emphasizing the key points of DSSCs. Concerning the latter, also the most important classes of molecules which have been used as photosensitizers will be discussed and complementary and alternative technologies will be illustrated. The use of the same class of sensitizers for the H₂ photocatalytic production will be discussed with reference to the most recent advances in the field.

Periodo di Svolgimento: April-May 2019

Numero minimo di studenti per l'attivazione: 5

Prova di accertamento: Lettura critica e discussione di un articolo scientifico sugli argomenti del corso

Richiesta rimborso: NO

PIA: NO

SSD: CHIM/06

TITOLO DEL CORSO*: Nutraceuticals and Food Supplements: contamination risks and production control

DOCENTE: E. Dragoni (ABOCA)

DOCENTE PROPONENTE: C. Nativi (Dipartimento di Chimica “Ugo Schiff, UNIFI)

ABSTRACT: Food supplements are concentrated sources of nutrients (i.e. mineral and vitamins) or other substances with a nutritional or physiological effect that are marketed in “dose” form (e.g. pills, tablets, capsules, liquids in measured doses). A wide range of nutrients and other ingredients might be present in food supplements, including, but not limited to, vitamins, minerals, fibers and various plants and herbal extracts.

Food supplements are intended to correct nutritional deficiencies, maintain an adequate intake of certain nutrients, or to support specific physiological functions. In the EU, food supplements are regulated as foods.

During the course, will be illustrated the application of HACCP principles on food supplement production. HACCP is a scientific, risk-based approach intended to decrease health hazards by

identifying and controlling the critical points of a food safety management system. The HACCP model is appropriate for use across the entire supply cycle, from harvesting of raw materials to production processes, product distribution and consumption.

Periodo di Svolgimento: February 2019

Numero minimo di studenti per l'attivazione: 5

Prova di accertamento: Questionario-test apprendimento (preparato dal docente) e/o discussione di casi reali.

Richiesta rimborso: 250 EURO

PIA: NO

SSD: CHIM/02

TITOLO DEL CORSO: Rheology of Complex Materials and Bioplastics

DOCENTE: Inmaculada Martínez García (Departamento de Ingeniería Química, Química Física y Ciencias de los Materiales, Universidad de Huelva (Spagna))

DOCENTE PROPONENTE: Pierandrea Lo Nostro

ABSTRACT: The course introduces the rheology of complex materials (emulsions and gels, biopolymers, bioplastics, surfactants, nanostructured composites, etc). Special attention is paid to the manufacture of high-quality, cost-competitive and biodegradable products as bioplastics, bioadhesives, nanobio-composites, etc. from renewable biomass, biopolymers mainly. The course also provides an overview on their applications.

Periodo di Svolgimento: 20/05/2019 - 19/06/2019

Numero minimo di studenti per l'attivazione: 1

Prova di accertamento: to be defined with students

Richiesta rimborso: NO

PIA: SI
