UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Technology of Materials With Industrial Laboratory

2627-3-ESM01Q022

Aims

Materials Technology with Industrial Laboratory consists of preparation ("Knowledge and Understanding") and support activities for the external internship ("Ability to apply knowledge and understanding"), as an integral part of the course.
In particular, the topics indicated below will be covered, as well as additional ones, based on specific requests from the students. The discussion will give the students the opportunity to critically reflect on the opportunities and difficulties encountered during the internship period ("Learning, self-assessment and self-regulation skills"), and present their own activities ("Communication and argumentative skills").

Contents

During the course, the following topics will be explored: literature research, industrial characterization techniques, effective scientific presentation, writing a scientific report, and analysis of case studies.

Detailed program

During the course, some common aspects related to the external internship experience will be explored and discussed, including:
• Bibliographic and literature research, starting from databases for articles and patents.
• In-depth study of any new characterization techniques, not covered during the three-year degree course (e.g. mechanical analysis, rheology, analysis of surface properties, etc.).
• Creation of an effective scientific presentation: contents, styles and timing.
• Preparing and structuring a scientific report, with the goal of writing the final thesis.
• Analysis of case studies, starting from the experience of each student.

Prerequisites

The student need to have the minimum requested number of CFU for starting an internship.

Teaching form

Lectures and excercises will be in the class.

Textbook and teaching resource

Scientific literature, based on internship projects.

Semester

Second semester.

Assessment method

The assessment is composed by:
• a mid-term presentation, during the internship activity, to present the context, the scientific objectives, the methods and, if available, any preliminary results (30%).
• a final and complete presentation of the internship activity (70%), which will also be an opportunity for the student to prepare for the final defense discussion.

The evaluation will assess the following points:

Knowledge and Understanding. The student demonstrates mastery of the complex scientific and technical concepts, articulating connections and providing exhaustive explanations, based on the scientific literature.

Ability to apply knowledge and understanding. The student demonstrates an advanced ability to analyze a phenomenon, a syhnthesis or a charatcterization method, understanding strenghts and limitations. Knowledge applications during the internship activities is methodologically rigorous, and supported by data and arguments.

Communication and argumentative skills. In the activities and in the final oral exam, the student presents and answers questions in clear and structured manner. The speech is fluid.

Learning, self-assessment and self-regulation skills. The student demonstrates an advanced ability to self-reflect, developing a detailed and in-depth analysis of his/her own learning and professional development path.

Grading:

< 18: insufficient grade; minimum level of preparation for presentations not met;
18–21: limited ability to discuss and analyze topics, based only with the instructor's assistance and questioning; presentation skills and vocabulary not always correct; limited capacity for critical analysis;
22–24: limited ability to discuss and analyze topics independently; use of correct vocabulary - though not entirely accurate or clear - and presentation skills that are sometimes uncertain;
25–27: ability to develop arguments and critical analysis independently; ability to apply knowledge to concrete cases; use of correct vocabulary and competence in using discipline-specific terminology;
28–30/30L: personal ability to discuss and critically analyze topics independently; excellent capacity for critical and independent thought; full command of discipline-specific terminology and a rigorous, articulate presentation style.

Office hours

By appointment.

Sustainable Development Goals

INDUSTRY, INNOVATION AND INFRASTRUCTURE