

STEM Courses at LdM Rome

Spring 2020

Istituto
Lorenzo de' Medici

THE ITALIAN INTERNATIONAL INSTITUTE

FLORENCE // ROME // TUSCANIA //

 **LdM** The Italian
International
Institute
Lorenzo de' Medici

ABOUT ISTITUTO LORENZO DE' MEDICI

With over 45 years of experience in international education, Istituto Lorenzo de' Medici (LdM), is one of the most distinctive and well-established study abroad institutions in Italy. LdM prides itself on offering academic and professionally-oriented courses designed to complement a variety of study abroad programs, as well as to enrich students' knowledge, education and skills. Students may choose from 600 different courses in 39 subject areas, which are taught in English at LdM's three locations: Florence, Rome, and Tuscany. At each of LdM's three sites, the educational opportunities are deeply rooted in the surrounding environments, allowing students to experience first-hand the inspiring culture of both historical and contemporary Italy.

Courses fall under seven main academic divisions: Liberal Arts and Social Sciences, Creative Arts, Design, Sciences, Agriculture, Italian Language and Culture, and Nutrition, Italian Gastronomy and Culture. LdM integrates formal, university-level learning with an emphasis on personal growth, individual engagement, and community responsibility.

STEM PROGRAM AT LdM ROME

The LdM Rome STEM Program offers STEM and related majors a unique educational opportunity: rigorous science courses taught in collaboration with Università Roma Tre, offering state-of-the-art teaching and research laboratories.

The core of the LdM Rome STEM Program is a required course on Italy's Contribution to Modern Science. For centuries, Italian researchers have advanced the sciences, often affecting paradigm shifts. By examining important scientists from the Renaissance to the present, students explore the development of scientific thinking, its cultural contexts and its public role. Rome offers the perfect setting for this integrated exploration of the sciences and their histories.

Students combine this core course with a selection of varied STEM-area courses. In Spring 2020, STEM courses will be offered in the fields of biology, chemistry, environmental science, and health sciences. In addition, students may choose general education courses in a variety of fields including art history, psychology, nutrition and gastronomy, business, ancient studies, communications, Italian language, literature, philosophy, religious studies, political science and international studies, sociology, and more.

For Liberal Arts and Social Sciences, Creative Arts, Italian Language and Culture, Nutrition and Italian Gastronomy and general education courses, please see the LdM Rome Spring 2020 Semester schedule. Updated schedules available at www.ldminstitute.com

N.B.: Students participating in the LdM Rome STEM Program are required to have a minimum 3.0 cumulative GPA. Specific STEM attendance and grading policies apply. Any student taking a science course in Rome during the semester belongs to the STEM Program.

The core course and the STEM courses cannot be changed, dropped or withdrawn from. Italian language study is encouraged but no language courses are required. To help ensure a successful experience, we recommend that students take no more than two science courses with a lab component.

SPRING 2020 - STEM COURSE OFFERING

SCIENCES COURSES

Introduction to Molecular Genetics with Laboratory

4 cr. / 90 hrs

Human Anatomy II with Laboratory

4 cr. / 90 hrs

Principles of Biochemistry

3 cr. / 45 hrs

Introduction to Neuroscience

3 cr. / 45 hrs

General Microbiology with Laboratory

4 cr. / 90 hrs

Organic Chemistry II with Laboratory

4 cr. / 90 hrs

Principles of Environmental Science

3 cr. / 45 hrs.

International Hospital Internship

3 cr. / 135 hrs

CORE COURSE

Italy's Contribution to Modern Science

3 cr. / 45 hrs



SCIENCES COURSES

BIO 280 R

INTRODUCTION TO MOLECULAR GENETICS WITH LABORATORY

This course provides students with a foundation of the principles of genetics. Starting with the study of the function and structure of DNA and RNA, the course explores the principles of genetics such as transmission (Mendelian Inheritance), gene expression and recombination. Lectures are combined with laboratory sessions to provide students with practical knowledge of the techniques of molecular genetics. This course is for science majors only. Taught in collaboration with Università Roma Tre.

Prerequisites: General Biology I with Laboratory, or equivalent

BIO 320 R

HUMAN ANATOMY II WITH LABORATORY

This course is the second part of a two-semester introductory sequence to human anatomy and physiology. It emphasizes tissue organization, physiology, and the structure of endocrine, cardiovascular, respiratory, immune, digestive, reproductive, lymphatic systems. The laboratory reflects these topics. This course does not involve the use of dissected or prosected materials. Italian law forbids the use of cadaver materials in all but medical school courses of instruction. This course is for science majors only. Taught in collaboration with Università Roma Tre.

Prerequisites: Grade C or higher in Human Anatomy I with Laboratory, or equivalent

BIO 330 R / CHM 330 R

PRINCIPLES OF BIOCHEMISTRY

This course provides a comprehensive introduction to the concepts of biochemistry. It focuses on understanding the structure, synthesis and metabolism of the major biomolecules: nucleotides, lipids, proteins and carbohydrates. Furthermore, it explores the biochemical principles of genetics, enzyme function and other signaling functions in the body.

Prerequisites: CHM 221 Organic Chemistry I with Laboratory and General Biology I, or equivalents

BIO 360 R

INTRODUCTION TO NEUROSCIENCE

This course provides a study of the organization and function of the human nervous system and brain. Students will gain an understanding of the physiological properties of neurons, examine the structure and the function of the system's brain that serves the senses and commands voluntary movements. Particular emphasis will be given to the neurology of human behavior including motivation, sex, emotion, sleep, language, attention and mental illness. Students will also explore how the environment modifies the brain. Through a field trip to a neuroscientific laboratory, the students will be introduced to the main Neuroscience techniques aimed at studying the brain's plasticity.

Prerequisites: Enrollment is restricted to Science or Psychology majors only. Grade of C or higher in General Biology I with Laboratory, or equivalent

BIO 380 R

GENERAL MICROBIOLOGY WITH LABORATORY

The course provides a survey of the biology of microorganisms, with emphasis on the domain Bacteria. Topics include cell structure, microbial growth, metabolism, genetics, DNA manipulation, diversity among Bacteria, Archea and Virus, microbial ecology and evolution. The course also explores the interaction of microorganisms with humans, infection diseases and their transmission. The laboratory experience includes general microbiology laboratory procedures of culturing, identifying, analysing and researching microbes.

Prerequisites: 1) General Biology I and II; 2) CHM 221 Organic Chemistry I; 3) BIO 280 Introduction to Molecular Genetics, or equivalents

CHM 222 R

ORGANIC CHEMISTRY II WITH LABORATORY

This course is the second part of a two-semester introductory sequence to organic chemistry. The course provides the extension of the principles of the relationship between structures, properties, functionalities, and the resulting reactions of organic compounds. The compounds covered include alcohols, ethers, conjugated system, amines, carbonyl derivatives, and others. The course focuses on reaction mechanisms, stereochemistry, multiple step synthesis, and advanced spectroscopic analytics. Accompanying three-hour weekly laboratory session provides hands-on experience that consolidates and expands upon the theories and concepts learned, with training in various techniques of separation, synthesis, and analysis. This course is for science majors only. Taught in collaboration with Università Roma Tre.

Prerequisites: Grade of C or higher in CHM 221 Organic Chemistry I with Laboratory, or equivalent

EVS 282 R

PRINCIPLES OF ENVIRONMENTAL SCIENCE

This course provides students with an overview of the principles of environmental science. In particular, it explores the impact that human activities have on the environment by studying issues such as pollution, waste management, biodiversity loss, and climate change. Emphasis is placed not just on understanding the complex relationships between individual activities and systemic effects on the environment, but also on how to develop remedial solutions, while considering the roles governments, non-profit organizations, business, and individuals play. This course is for science majors only.

Prerequisite: CHM 135 General Chemistry I with Laboratory, or equivalent

HSC 361 R

INTERNATIONAL HOSPITAL INTERNSHIP

An academic Internship is an extraordinary learning opportunity based on reflection, knowledge, direct observation, clear objectives and strict assessment. Guided by a STEM department as well as a professional on-site supervisor, students will observe the daily medical clinical activity at the Salvator Mundi International Hospital. Students will learn the art of clinical history taking, observe the performing of imaging tests (such as CT scan, MRI, ECG scans, x-rays, etc.), and complete tasks assigned by their on-site supervisor such as reading scientific papers or writing reports. Students will start to understand how medical insurances work and will be stimulated to reflect on ethical and bioethical cases. Guided by the experience of observing clinical practice, students will increase their awareness of patient-doctor relationships and the inner workings of hospitals, as well as gain insights into their future interests for specialization. The intern is monitored by both the on-site supervisor and an LdM faculty member. The grade assigned by the faculty internship supervisor reflects the assessment of weekly reports, two papers, and an overall evaluation. Ten/twelve hours weekly at the internship site; student internship schedules and on-site duties may vary.

Note: Placement opportunities are limited and subject to change. Admission is contingent on the student's CV, two reference letters, a formal letter of intent. Students who enroll must submit supporting documentation by the application deadline, and acceptance is conditional upon the result of an on-site interview during the first week of the term. Being an International Hospital, knowledge of Italian language is beneficial, but not mandatory.

Prerequisite: Pre-med, pre-nursing, or pre-health majors of sophomore standing

CORE COURSE

HIS 281 R / PHI 281 R *ITALY'S CONTRIBUTION TO MODERN SCIENCE*

This course introduces science students to the historic developments of the basic principles and theories of modern physics, astronomy, engineering, chemistry, and biology. Students learn about the contributions of great Italian scientists and mathematicians, from the early modern period, through the Enlightenment era, up to today (including Fibonacci, Galilei, Malpighi e Fermi). The development of the different disciplines is studied in the context of relevant historic events and philosophical belief systems. A specific emphasis is also placed on the development of scientific methodology and principles of ethics in the sciences.

HOW TO APPLY

Please note that LdM requires students to have upheld good academic and disciplinary standing. Students participating in the LdM Rome STEM Program are required to have a minimum 3.0 cumulative GPA. Specific STEM attendance and grading policies apply. Students must be at least 18 years old and have completed one year of college by the start of the program. Students are requested to provide the following documents: application form, proof of payment, copy of passport, university transcript or equivalent (inclusive of grading system and translated in Italian or English), personal essay. Non-native English speakers are required to provide certification of proficiency in English, or other evidence, equivalent to the following minimum overall TOEFL scores: Paper Based Test 550+, Computer Based Test 213+, or Internet Based Test 80+. The application and housing form can be downloaded at www.ldminstitute.com.



APPLICATION DEADLINES: SPRING SEMESTER // NOVEMBER 15TH



LdM ITALY MAIN OFFICE ***FLORENCE, ROME AND TUSCANY***

Via Faenza, 43
50123 Florence, Italy
Phone: +39.055.287.360
Phone: +39.055.287.203
Fax: +39.055.239.8920
info@ldminstitute.com

LdM ACADEMIC RELATIONS ***AND STUDENT SERVICES***

3600 Bee Caves Road, Suite 205B
AUSTIN, TX 78746 U.S.A.
Phone: +1.877.765.4LDM (4536)
Phone: +1.512.328.INFO (4636)
Fax: +1.512.328.4638
info@ldminstitute.com

WWW.LDMINSTITUTE.COM