

# STEM Courses at LdM Rome

*Fall 2019*

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 Fall 2019, STEM courses will be offered in the fields of biology, chemistry, and health sciences. In addition, students may choose general education courses in a variety of fields including art history, business, ancient studies, communications, Italian language, literature, philosophy, religious studies, political science and international studies, sociology, and psychology.

For Liberal Arts and Social Sciences, Creative Arts, Italian Language and Culture, Italian Gastronomy and general education courses, please see the LdM Rome Fall 2019 Semester schedule. Updated schedules available at [www.ldminstitute.com](http://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.

## FALL 2019 - STEM COURSE OFFERING

### SCIENCES COURSES

#### Introduction to Molecular Genetics with Laboratory

4 cr. / 90 hrs

#### Human Anatomy I with Laboratory

4 cr. / 90 hrs

#### Principles of Biochemistry

3 cr. / 45 hrs

#### General Microbiology with Laboratory

4 cr. / 90 hrs

#### Organic Chemistry I with Laboratory

4 cr. / 90 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 310 R**

#### **HUMAN ANATOMY I WITH LABORATORY**

This is the first semester of a two-semester sequence offering an introduction to the study of the human body and its structures, focusing on cells, tissues, skeletal, muscular and nervous systems, organs, organ systems and the intact organism. The course is accompanied by laboratory exercises to gain practical experience in identifying structures and functions.

**Prerequisites:** General Biology I 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 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 221 R**

#### **ORGANIC CHEMISTRY I WITH LABORATORY**

This course is the first part of a two-semester introductory sequence to organic chemistry. The course provides a thorough understanding of the relationship between structures, properties, functionalities, and resulting reaction of organic compounds. The compounds covered include alkanes, alkenes, alkynes, alkyl halides, alcohols, and ethers, which are studied with regards to nomenclature, stereochemistry, stability, reaction mechanism, and structural analysis with spectroscopic methods. Accompanying three-hour weekly laboratory session provides hands-on experience that consolidates and expands upon the theories and concepts learned, with training in the relevant techniques, such as purification, synthesis, and analytical methods. This course is for Science majors only. Taught in collaboration with Università Roma Tre. Note: Specific STEM attendance and grading policies apply. **Prerequisites:** Grade of C or higher in CHM 135 and 136 General Chemistry I & II with Laboratory, or equivalent.

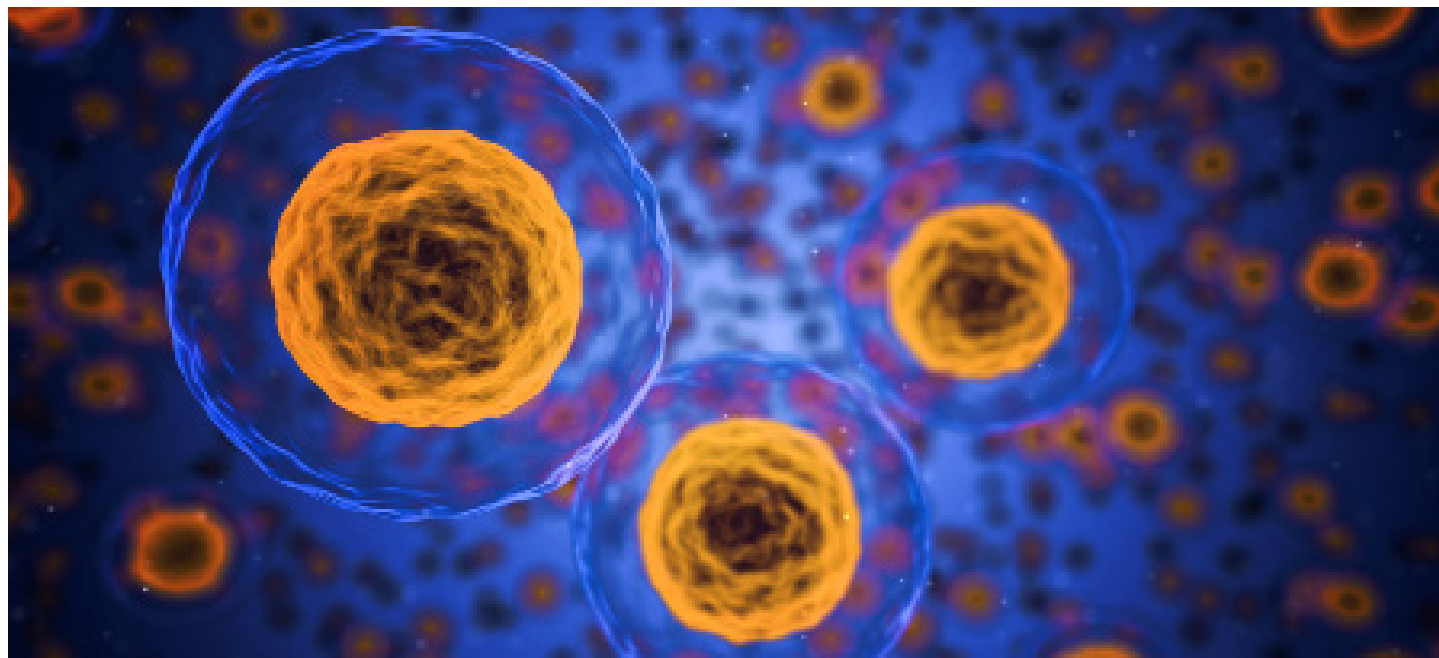
### **HSC 361 R**

#### **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](http://www.ldminstitute.com).



**APPLICATION DEADLINES:** FALL SEMESTER // JUNE 15<sup>TH</sup>



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