

DUAL M.S. IN CIVIL ENGINEERING WITH THE UNIVERSITY OF BOLOGNA

Overview

The Department of Civil and Architectural Engineering (CAE) at the University of Miami (UM) has partnered with the University of Bologna (UNIBO) in Italy to offer a dual Master of Science degree program in Civil Engineering (Dual MSCE). Each dual degree program is structured in four semesters and consists of courses and research with two semesters to be completed at UM, and two semesters to be completed abroad at UNIBO. The degrees conferred by each institution are as follows:

Dual Degree Program Area of Emphasis

Civil Engineering Environmental Engineering

Academic Degree Obtained at UNIBO

Laurea Magistrale in Civil Engineering (Classe LM) - *Taught in English*

Laurea Magistrale in Ingegneria per l'Ambiente ed il Territorio (Classe LM 35) - *"Earth Resources Engineering" International Curriculum taught in English*

Academic Degree Obtained at UM

MS in Civil Engineering

MS in Civil Engineering (*Environmental Emphasis*)

Upon Completion of the Dual Degree Program requirements, the students will be awarded two separate and distinct Master's of Science degrees.

Admission Requirements

This program is open to students who are admitted to the graduate program at the end of their junior year as part of the 4+1 (BS + MS) program. Students applying for this program must have a minimum grade point average of 3.0.

Once enrolled in the 4+1 (BS+MS) program, students are eligible to apply to the dual MS degree program. The five-year program leading to a B.S. and dual M.S. degrees (BS/2MS) can be completed in 10 semesters as long as the student makes satisfactory progress.

The 5-year dual M.S. in Civil Engineering degree program is open to undergraduates majoring in either civil or architectural engineering. Civil engineering majors will receive a BSCE, and two MSCE degrees (one from UM and one from UniBo). Architectural engineering majors who satisfy the pre-requisites for the master's-level civil engineering coursework are also eligible. They will receive a BS in Architectural Engineering, and two MS degrees in Civil Engineering (one from UM and one from UniBo).

Admission to the 4+1 (BS+MS) program and the BS + dual M.S. program is conducted through the College of Engineering Admissions Office. Any student interested in applying should contact the Director of Admissions in the College of Engineering and their academic advisor in the CAE Department. Both should conduct an overview and feasibility study based on the student's current program of study, and discuss the application requirements and timeline.

Curriculum Requirements

The curriculum for the dual M.S. degree program consists of courses that are required for the MS-UM degree, courses for the MS-UNIBO degree, and common courses shared between the programs. In general, students will enroll in the following program of study during their 4th year (Senior Year), and 5th year (at UNIBO). The table is shown in UM credit equivalents:

Senior Year		
Fall Semester I		Credit Hours
Graduate Level Course		3
Graduate Level Course		3
Credit Hours		6
Spring Semester II		
CAE 604	Master's Design Project	3
Graduate Level Course		3
Credit Hours		6
Total Credit Hours		12

Fifth Year (Graduate)		
First Semester		Credit Hours
Transfer Graduate Level Course		3
Transfer Graduate Level Course		2
Transfer Graduate Level Course		2
Graduate Course for UNIBO MS		
Graduate Course for UNIBO MS		
CAE 795	Special Problems	2
Credit Hours		9
Second Semester		
Transfer Graduate Level Course		3
Transfer Graduate Level Course		2
Transfer Graduate Level Course		2
Graduate Course for UNIBO MS		
Graduate Course for UNIBO MS		
CAE 795	Special Problems	2
Credit Hours		9
Total Credit Hours		18

Students shall submit an individual Program of Study to select courses as part of the program. The individual study program must be approved by both institution's Academic Coordinators. A thesis is required as part of the program and will be completed at UNIBO while working with an advisor at UM. Students must defend their Master's Thesis according to the rules and modalities of UNIBO to obtain the Laurea Magistrale degree.

Program credits are reported using two systems: the European Credit Transfer System (ECTS) and the United States College Credit System (US). The transfer rate between the systems is 2 ECTS credits = 1 US credit. The credit requirements for each MS program are based on the transfer credits between the institutions.

Any deviation from the designated course lists requires pre-approval by the student's UM supervisory committee, the UM CAE Graduate Program Director, and the UNIBO Academic Advisor prior to course registration.

5 YEAR BS/DUAL MS

COURSE SCHEDULE FOR CIVIL ENGINEERING

4TH Year (Senior Year at UM): All courses in Table A (24 U.S., 48 ECTS) + 2 courses in Table B (6 U.S., 12 ECTS)

5th Year (at UNIBO): The remaining courses in Tables B and C (24 U.S., 48 ECTS) + Civil Engineering Research (6 U.S., 12 ECTS) + CAE 795: Special Problems (4 U.S., 8 ECTS). Courses in Table C consist of Curriculum courses and Elective courses which can be chosen by the student, depending on the study area they are interested. They are shown in Tables E, F, and G.

TABLE A

Courses offered at UM

Code	Title	Credit Hours
CAE 402	Professional Engineering Practice	3
CAE 450	Transportation Engineering II	3
CAE 470	Foundations and Earth Retaining Systems	3
CAE 520	Advanced Design of Concrete Structures	3

CAE 530	Water Resources Engineering II	3
CAE 604	Master's Design Project	3
As well as TWO Courses among the following:		
CAE 611	Advanced Structural Analysis	3
CAE 621	Advanced Design of Steel Structures	3
MAE 607	Advanced Mechanics of Solids	3
CAE 711	Theory of Elasticity	3
Total Credit Hours		24

Courses offered at UNIBO

Code	Title	Credit Hours
Infrastructure Systems		9
Advanced Hydrosystems Engineering		9
Design Projects		6
Civil Engineering Research A		6
Advanced Design of Structures		9
Advanced Structural Mechanics		9
Total Credit Hours		48

TABLE B**Courses offered at UM**

Code	Title	Credit Hours
CAE 460	Construction Management	3
MAE 601	Methods of Engineering Analysis	3
CAE 670	Advanced Foundation Engineering	3
MAE 705	Finite Element Methods in Mechanical and Aerospace Engineering	3
Total Credit Hours		12

Courses offered at UNIBO

Code	Title	Credit Hours
Managing Engineering and Construction Processes		6
Numerical Methods I		6
Geotechnical Engineering		6
Numerical Methods II		6
Total Credit Hours		24

*Numerical Methods I & II may be offered in a combined course worth 12 credit hours.

TABLE C**Courses offered at UM**

Code	Title	Credit Hours
Curriculum Course		3
Curriculum Course		3
Curriculum Course		3
Curriculum Course		3
Elective Course		3
Elective Course		3
Total Credit Hours		18

Courses offered at UNIBO

Code	Title	Credit Hours
Curriculum Course		6
Curriculum Course		6
Curriculum Course		6

Curriculum Course	6
Elective Course	6
Elective Course	6
Total Credit Hours	36

TABLE D**Courses offered at UM**

Code	Title	Credit Hours
CAE 810	Master's Thesis	6
Total Credit Hours		6

Courses offered at UNIBO

Code	Title	Credit Hours
Civil Engineering Research B		12
Total Credit Hours		12

TABLE E**Curriculum 1 - Structural Engineering**

Code	Title	Credit Hours
Mechanics of Historical Masonry Structures ^{ECTS}		6
Structural Safety ^{ECTS}		6
Structural Strengthening & Rehabilitation ^{ECTS}		6
Computational Mechanics ^{ECTS}		6
Earthquake Engineering ^{ECTS}		6

TABLE F**CURRICULUM 2 - Territorial Infrastructures**

Code	Title	Credit Hours
Applied Geomatics ^{ECTS}		6
Context-Sensitive Design in Transportation Infrastructures ^{ECTS}		6
Advanced Hydrology & Water Resource Management ^{ECTS}		6
Coastal Engineering ^{ECTS}		6

TABLE G**ELECTIVE COURSES**

Code	Title	Credit Hours
Engineering Geology ^{ECTS}		6
Science and Technology of Composite Materials ^{ECTS}		6
Sustainability in Construction ^{ECTS}		6
Biotechnology for the Sustainable Reclamation of Contaminated Lands and Waters ^{ECTS}		6

COURSE SCHEDULE FOR ENVIRONMENTAL ENGINEERING

4th Year (Senior Year at UM): All the courses in Table A (24 U.S., 48 ECTS) + 2 courses in Table B (6 U.S., 12 ECTS)

5th Year (at UNIBO): The remaining courses in Tables B and C (24 U.S., 48 ECTS) + Civil Engineering Research (6 U.S., 12 ECTS) + CAE 795 Special Problems (4 U.S., 8 ECTS)

TABLE A**Courses offered at UM**

Code	Title	Credit Hours
CAE 402	Professional Engineering Practice	3
CAE 430	Water-Resources Engineering I	3
CET 440	Water Quality Control Systems	3
CAE 530	Water Resources Engineering II	3
CET 533	Water-Quality Control in Natural Systems	3
CET 540	Environmental Chemistry	3

CET 542	Solid and Hazardous Waste Engineering	3
CAE 604	Master's Design Project	3
Total Credit Hours		24

Courses offered at UNIBO

Code	Title	Credit Hours
Industrial Ecology M		9
Advanced Hydrosystems Engineering M		9
Water Engineering - Advanced Hydrology & Water Resources Management M		6
Industrial Safety M		6
Resources and Recycling M		6
Laboratory of Environmental Engineering		3
Laboratory on Alternative and Renewable Raw Materials		3
Environmental Engineering Research A		6
Total Credit Hours		48

TABLE B**Courses offered at UM**

Code	Title	Credit Hours
MAE 601	Methods of Engineering Analysis	3
CET 641	Environmental Engineering Microbiology	3
CAE 670	Advanced Foundation Engineering	3
Total Credit Hours		9

Courses offered at UNIBO

Code	Title	Credit Hours
Numerical Methods I		6
Biotechnology for the Sustainable Reclamation of Contaminated Lands and Waters M		6
Geotechnical Engineering		6
Total Credit Hours		18

TABLE C**Courses offered at UM**

Code	Title	Credit Hours
CET 730	Advanced Fluid Mechanics	3
CET 735	Water and Wastewater Engineering: Treatment and Reuse	3
CAE 743	Risk Analysis	3
Elective Course		3
Elective Course		3
Elective Course		3
Elective Course		3
Elective Course		3
Total Credit Hours		24

Courses offered at UNIBO

Code	Title	Credit Hours
Applied Geomatics M		6
Minerals Production Systems M		6
Engineering Geology M		6
Petroleum Geosystems M		6
Coastal Engineering M		6
Elective Course		6
Elective Course		3

Elective Course	3
Total Credit Hours	42

TABLE D**Courses offered at UM**

Code	Title	Credit Hours
CAE 810	Master's Thesis	6
Total Credit Hours		6

Courses offered at UNIBO

Code	Title	Credit Hours
Environmental Engineering Research B		12
Total Credit Hours		12

Grade Equivalencies

The following conversion table of grades applies once a course is completed:

Grade	Description
Grade at UM	
A+	
A	
A-	
B+	
B	
B-	
C+	
C	
C-	
D+	
D	
D-	
F	
I (Incomplete)	
W (Withdrawal)	

Grade	Description
Grade at UNIBO	
30L	
30	
28	
26	
25	
24	
23	
22	
21	
20	
19	
18	
Failed/Respinto	
No Equivalent	
No Equivalent	

Additional Details

- Each Student is required to complete a Program of Study and have it approved by their Supervisory Committee and the Graduate Program Director prior to entering the program.
- Internships, Practical Training, Workshops, or other types of practicum are neither required nor optional credit-earning components in the established graduate curriculum (Program of Study). Credit earned through these experiences (such as UMI 605 (<http://bulletin.miami.edu/search/?search=umi+605>)) will not count towards any CAE degree requirements. CAE 665 - 669 and CAE 765 - 769 shall not count towards the degree.
- Credits completed at UniBo (that count towards the MS-UM degree) will be facilitated by students enrolling in SAP (Study Abroad Program) sections at UM. Graduate work that counts towards the MS-UM degree (i.e. SAP sections) must be completed with no grade below "C".
- All graduate courses that count towards the MS-UM degree (including SAP courses) must be completed with an overall average of "B" or better and no grade below "C".
- The Supervisory Committee at the University of Miami must have a minimum of 3 members, including:
 1. Committee Chair (Advisor) shall be full-time CAE Faculty and a member of the Graduate Faculty
 2. Full-time or Part-time CAE Faculty
 3. Non-CAE member with an earned Ph.D.

In addition to the Committee Chair, at least one member must be tenured/tenure-earning or a member of the Graduate Faculty.