

**Agreement of Cooperation for the Granting of Dual Degrees – UNIBO and UM**

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**AGREEMENT OF COOPERATION FOR THE GRANTING OF DUAL DEGREES**

**Between**

**ALMA MATER STUDIORUM – UNIVERSITÀ DI BOLOGNA** (hereafter referred to as "University of Bologna" or "UNIBO"), represented by its Rector, Prof. Francesco Ubertini, Via Zamboni 33 Bologna 40126 Italia

**and**

**UNIVERSITY OF MIAMI** (hereafter referred to as "University of Miami" or "UM"), represented by its Asst. VP for Business Services, Humberto M. Speziani, 1230 Gables One, Coral Gables, FL 33146 U.S.A. Collectively, the University of Miami and the University of Bologna shall be referred to as the "Parties."

It is agreed and stipulated as follows:

**Article 1 – Preamble**

WHEREAS, on July 7, 2014 the Parties subscribed an Agreement of Cooperation for Granting Dual Degrees in the field of Civil and Environmental Engineering;

WHEREAS, the Agreement expired by its terms on December 31, 2019;

WHEREAS, the Parties are interested in resuming the collaboration and academic exchange partnership in the field of Civil and Environmental Engineering;

WHEREAS, the Italian Ministerial Decree DM 270/04 allows Italian Universities to jointly grant degrees (1<sup>st</sup> and 2<sup>nd</sup> cycle) with foreign Universities;

WHEREAS, UM and UNIBO each have their respective degree requirements for engineering and architecture;

WHEREAS, the University of Miami on December 11, 2013 signed a Memorandum of Understanding with H2CU – Honor Center of Italian Universities



Rep. 4849/2020

Prot. 150076/2020

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(UNIBO is a member thereof) for cooperation for granting of Dual Degrees in the field of Engineering, in which the establishment of a pilot agreement was foreseen;

WHEREAS, UNIBO offers engineering degree programs in the English language;

WHEREAS, the Department of Civil, Chemical, Environmental and Materials Engineering (DICAM) of the University of Bologna and the Department of Civil, Architectural and Environmental Engineering (CAE) of the University of Miami have a common interest in cooperating and providing students at UM and UNIBO with an opportunity to earn a dual degree, with one degree (MS, Master of Science, according to the 4+1 system) awarded by UM while the other (LM, Laurea Magistrale or second cycle degree according to the 3+2 EU system) awarded by UNIBO;

WHEREAS, the Parties with their resources and funds, and in accordance with the law and regulations of their respective countries, shall collaborate to facilitate exchanges of students who participate in the program as described in this Agreement;

The Parties have agreed to the terms of this Agreement as set forth below.

### **Article 2 – Objective of the Agreement**

The University of Bologna and University of Miami agree to establish an integrated two-year (four-semester) program during which students will study for a period of two semesters at each institution (referred to as "Dual Degree Programs").

The students successfully completing the study program will receive the following degrees: the 2<sup>nd</sup> cycle Degree "Laurea Magistrale" (LM, two years, 120 ECTS), granted by the University of Bologna, and the Master of Science Degree (MS, one year, 30 U.S. Credits), granted by the University of Miami. The two degrees are awarded separately after the student completes the individual requirements for each degree.



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The Dual Degree Programs to be activated with the present agreement are listed in Annex A. Annex A may be updated to activate or deactivate specific Dual Degree Programs by a written agreement of the Parties.

The Agreement is restricted to students enrolled in MS/LM programs offered by the following Departments: a) Department of Civil, Architectural and Environmental Engineering (CAE) at UM and b) Department of Civil, Chemical, Environmental and Materials Engineering (DICAM) at UNIBO. Accordingly, the dual MS/LM program will be established in:

1. “Civil Engineering”, involving MS students in Civil Engineering at UM and LM students in Civil Engineering (taught in English) at UNIBO;
2. “Environmental Engineering” involving MS students in Civil Engineering (Environmental emphasis) at UM and LM students in Ingegneria per l'Ambiente e il Territorio (Earth Resources Engineering curriculum, taught in English) at UNIBO.

### Article 3 – Definitions

For the purpose of this agreement only, the following definitions apply:

- MS-UM is a one-year (30 U.S. credits) Master of Science degree offered at the University of Miami. UM offers a 4+1 Bachelor-Master (BS-MS) program.
- LM-UNIBO is a two-year (120 ECTS credits) 2<sup>nd</sup> cycle Degree “Laurea Magistrale”, offered at the University of Bologna. UNIBO offers a 3+2 Laurea-Laurea Magistrale (L-LM) program.
- Home institution or university is the university where student is enrolled for the 1<sup>st</sup> year of the Dual Degree program (last year of BS degree for UM and 1<sup>st</sup> year of LM degree for UNIBO), and where student pays tuition for the Dual Degree program.



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- Partner or Host institution or university is the university where student is registered for the year abroad to obtain the Dual Degree.
- Outbound student is student going from the Home institution to the Partner institution.
- Inbound student is student coming to the Partner institution from the Home institution.
- Enrolled student is an outbound student paying tuition at the Home institution. According to this definition, a student is enrolled in the Home institution.
- Registered student is an inbound student in the Partner institution with all the rights and privileges of regular students but not paying tuition at the Partner institution.
- Credit - One (1) "U.S. credit hour" at UM corresponds to two (2) "ECTS" at UNIBO.

### Article 4 - Conditions

This pilot Agreement is subject to the following conditions:

- Partner institutions must show that an inbound student can feasibly earn an MS/LM degree in one year abroad taking specific courses which shall be offered in English. The student can take longer to complete the requirements; however, this will result in a graduation delay and may have additional cost implications for the student. Each year, and at the time of the publication of the course bulletin, UNIBO and UM will advise one another of the current list and description of their courses (including requisites) which shall be offered in English.

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- If the courses offered and identified in the Annexes to this Agreement are modified, then the Parties shall advise one another of such modifications in writing.
- Partner institution must have a structure in place to help accommodate inbound students as described in Article 5.6.

### **Article 5 - Students**

#### **5.1 Enrolment and mobility**

Participation in the Dual Degree Programs should involve an equal number of students from both Universities, whenever possible. A maximum of five students per year per institution is imposed. Should an exchange imbalance occur, then the number of inbound students shall be limited to the then-current number of outbound students until the balance is restored.

Students participating in the Dual Degree Program will be subject to the same admission requirements as for regular students and will be nominated by the Home university. In particular, students enrolled at UM will meet the admission requirements of UNIBO's two (2) year LM program, and students enrolled at UNIBO will meet the admission requirements of UM's MS program, including English proficiency levels set by the University of Miami and as demonstrated by the students' TOEFL exam score. Students will then apply for the MS/LM program at the Partner university. The Partner university will have the sole and absolute authority over which applicants it will allow to register in its programs and reserves the right to reject any that do not meet its standards of admission.

Students from UNIBO who want to participate in the Dual Degree program have to be enrolled in one of the two (2) Lauree Magistrali listed in Article 2.

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Students from UM who want to participate in the Dual Degree program have to be enrolled in one of the 4+1 (BS+MS) programs listed in Article 2. Students will register to the second year at UNIBO in order to attend the courses offered in the third and fourth semesters within the chosen UNIBO LM program.

The mobility structure, the correspondences between the teaching activities and the number of credits are described in Article 3 of Annex A.

### **5.2 Specifics for UM**

#### Outbound student (i.e. UM Students visiting UNIBO)

- In the 2<sup>nd</sup> year of the Dual Degree program, the UM student will register at UNIBO (2<sup>nd</sup> year of the LM degree at UNIBO) and transfer thirty (30) U.S. credits (the equivalent of 60 ECTS) from UM to UNIBO.
- While at UNIBO, the UM student will complete thirty (30) U.S. credits (the equivalent of 60 ECTS). Of these 30 U.S. credits, student will transfer fourteen (14) U.S. credits (seven the first semester and seven the second semester) from UNIBO to UM. After completing the required courses, the student must fulfill UNIBO's requirement to defend the Master Thesis (Tesi di Laurea Magistrale) and obtain the degree. To maintain full-time status at the 5<sup>th</sup> year, the student will enroll at UM for 18 graduate-level U.S. credits (nine per semester). This will include fourteen (14) credits taken at UNIBO and four (4) credits taken at UM under the direct supervision of the student's MS student advisor at UM.

#### Inbound student (i.e. UNIBO students visiting UM)

- The UNIBO student meeting admission requirements is allowed to take up to 30 U.S. credits earned during one year of enrollment for the MS program (i.e., two consecutive semesters and, if necessary, two summer sessions). Of the thirty (30) credits, six will be in a class entitled CAE 710 – Master's Thesis.

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### 5.3 Specifics for UNIBO

#### Outbound student (i.e. UNIBO students visiting UM)

- In the 2<sup>nd</sup> year of the Dual Degree program (2<sup>nd</sup> year of the LM-UNIBO), the UNIBO student will register at UM (MS degree at UM). Up to 30 U.S. credits earned at UM can be transferred to UNIBO and be counted to complete the two (2)-year LM degree at UNIBO. After completing the required courses, the student must fulfill UNIBO's requirement to defend the Master Thesis (Tesi di Laurea Magistrale) and obtain the Degree.

#### Inbound student (i.e. UM students visiting UNIBO)

- In the 2<sup>nd</sup> year of the Dual Degree program (5<sup>th</sup> year of the BS+MS program), the student meeting admission requirements is registered in the LM-UNIBO, with the same rights and privileges of an enrolled student. Waiting for UM student to obtain his/her Bachelor of Science after the beginning of the mobility, on the basis of a certification provided by UM attesting the achievement of 90 U.S. credits (the equivalent of 180 ECTS) in their first three years of study, he/she will be admitted to the relevant Laurea Magistrale. The evaluation of these 180 ECTS is valid only for the access to the LM-UNIBO as it doesn't provide for the award of an Italian first cycle degree.
- Thirty (30) U.S. credits (the equivalent of 60 ECTS) earned at UM can be transferred to UNIBO and counted towards the two (2)-year MS degree at UNIBO (see the Annexes).

### 5.4 Tuition and fees

During the period that they are registered students at the Host institution, tuition and fees will be paid by students at the Home university. Each university determines and



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approves its own tuition and fees for each academic year. There will be no exchange of student tuition funds between UM and UNIBO.

### **5.5 Insurance**

All students will be required to have health and accident insurance coverage that meets the requirements of both their Home and Partner universities in accordance with their normal requirements for full-time degree students. Each university will inform the inbound students of these requirements, which they will be required to comply with during the duration of their stay abroad, as well as during their travel to and from the Partner university. Proof of such insurance shall be furnished to the Partner university in advance of inbound student's arrival.

UNIBO confirms that its regularly enrolled students and its teaching and administrative staff are insured against any incident that they may suffer during their period of stay abroad for the activities concerned by this Agreement and that they are insured for legal liability against damage which they may involuntarily cause to third party (people and their properties). Health insurance is not provided by Unibo.

### **5.6. Services offered**

Students participating in the program shall enjoy the same rights and privileges and have the right to all services offered by the Partner university to its other full-time degree students.

Partner institution must have a structure in place to help accommodate inbound students. By structure it is intended that the Partner institution has the appropriate administrative setup for student information, registration, advisement and counsel available in the English language. Availability of housing, meal-plan and other ancillary services such as access to sports and welfare activities is desirable but not required.





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### **5.7 Fellowships or scholarships**

Each University may, at its sole discretion and according to its own internal procedures, grant fellowships or scholarships to the students who participate in the program.

### **5.8 Student responsibilities**

Participating students will be responsible for complying with all rules and regulations of the Partner institution and for paying all other costs associated with their study at the Partner institution, including, but not limited to housing, meals, transportation, immigration and visa documentation, books, and personal expenses.

### **5.9 Housing**

Students will be responsible for making their own living arrangements and, in particular, for securing their own housing. Both universities agree to provide the students with the level of assistance in obtaining housing that they give to their other full-time degree students.

### **5.10 Visa**

The Partner university will assist the exchange students in securing the immigration documents necessary to study at its institution. The students will pay the fees at the Partner institution and its government normally charges citizens of other countries for those services. However, ultimately it is the student's responsibility to obtain the proper immigration documents.

## **Article 6 – Coursework**

### **6.1. Academic Advisors and Selection of courses**

The Partner institution will provide each student admitted to a Dual Degree Program with the appropriate academic advisor. Subject to the approval of their advisors, the

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students will be permitted the same freedom of choice in course selection as enjoyed by its other degree students.

### **6.2. Release of the Degree**

Students successfully completing the requirements of the Dual Degree Program at each institution will obtain two degrees: the Laurea Magistrale at the University of Bologna and the Master of Science at the University of Miami. The receipt of one degree will not be contingent upon the completion of the requirements for the other. To obtain each degree, the students must submit the relevant documentation to each university according to its rules. Each Participant shall provide participating students with a transcript (in English) at the conclusion of the two-semester period reflecting the courses taken and the corresponding grade. In addition, at the conclusion of the first semester, each student shall be provided with the grades earned for the courses completed during that first semester.

### **Article 7 – Responsibility for the Agreement**

Each University shall appoint a coordinator for the Dual Degree Program and may change the coordinator as it deems necessary or appropriate, giving appropriate notice to the other Institution. For UM, the program of exchange will be coordinated by the International Education and Exchange Programs (IEEP) through the Office of the Senior Vice Provost and Dean of Undergraduate Education, with the contact being the Director of IEEP. For UNIBO the program of exchange will be coordinated by the Area Didattica e Servizi agli Studenti (AFORM) - Settore Convenzioni.

### **Article 8 – Evaluation of the Agreement**

The Parties will consult each other when appropriate, but at least once a year, in order to evaluate the progress of the agreement, to draw up a report about the ongoing initiatives.



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### **Article 9 – Duration of the Agreement**

The Agreement will be effective from the date of signature of the document by both parties and will be valid for a period of six (6) years, from September 1, 2020, with the possibility of renewal upon the written agreement of both parties. In particular, as regards students enrolled at UNIBO, it will be effective for students who will attend the second year of the study program during academic year 2021/2022 until 2025/2026.

Unibo could also accept incoming or outgoing students belonging to cohorts enrolled in previous years provided that their study plans are consistent with the annexes to this Agreement.

The agreement may be terminated by written notice by either party with sixty (60) days advance written notice to the other party. If either party exercises that option, students already participating in the exchange will be allowed to complete their studies at the Partner institution under the terms of agreement in effect at the time of their acceptance into the program. The Annexes can be modified by mutual consent between the Parties in writing, to no detriment to the students already enrolled.

### **Article 10 – Other**

Each university will be subject to the laws and regulations of its country and the policies of its institution. There are no third-party beneficiaries to this Agreement. Without limitation, no student is an intended third-party beneficiary to this Agreement. Nothing in this Agreement establishes a partnership or joint venture between the Universities. Each University will be solely responsible for payment of all salaries, wages, taxes, insurance, and benefits in respect to its employees.

The parties further acknowledge that performance of the Agreement is subject to compliance with applicable United States and Italian laws, regulations, or orders and agree to comply with such laws, regulations and orders, including those that may



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relate to the export of technical data and equipment, such as International Traffic in Arms Regulations (ITAR) and/or Export Administration Regulations (EAR), or their Italian equivalents, as may be amended, and agree to comply with all such laws, regulations or orders.

To this purpose the parties agree to keep each other informed about the relevant applicable rules concerning the implementation of the agreement.

No party will export, directly or indirectly, any Confidential Information without first obtaining any required export license or government approval and, in the case of Confidential Information disclosed by UM or UNIBO, without first obtaining permission from the other Party. In the event any Confidential Information is export-controlled, the disclosing party shall provide the receiving party with written notice containing the nature of the export-controlled information, prior to any exchange of export-controlled Confidential Information.

UNIBO represents and warrants to UM that it has not had its eligibility to participate in receiving federal financial aid terminated, had its certification to participate in receiving federal financial aid revoked, or had its application for certification or re-certification to participate in receiving federal financial aid denied by the U.S. Department of Education, or its Italian equivalent, from receiving federal financial aid and further represents and warrants that it has not voluntarily or involuntarily withdrawn from participation as an institution of higher learning or a recipient of funds by the relevant local jurisdiction(s) or agenc(y)(ies) under a termination, show-cause, suspension or similar type proceeding (all the foregoing each and collectively shall constitute a "disqualification" hereunder). In the event of any such disqualification, either by the U.S. Department of Education and/or by the relevant local jurisdiction(s) or agenc(y)(ies), UNIBO agrees to notify UM of such an occurrence as soon as

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reasonably practicable. Any such notifications shall be sent to the attention of the Director of IEEP at UM.

Any disagreement between the Parties related to interpretation or implementation of the agreement will be resolved amicably.

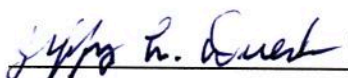
Each party hereto agrees to indemnify, defend, and to hold the other, its officers, directors, agents and employees, harmless from and against any and all losses, liabilities, demands, suits, judgments and claims, including reasonable attorney's fees, to the extent that such losses, liabilities, demands, suits, judgments, claims or fees arise out of or result from the willful act, fault, omission, or negligence of the indemnifying party, or of its employees, servants or agents, in performing its obligations under this Agreement.

This agreement may be translated into different languages. However, the Parties agree that the version in English shall be the controlling and operative agreement between the parties.

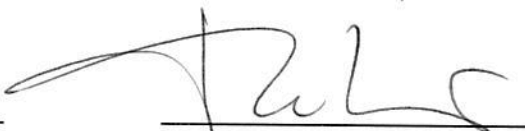
This Agreement is undersigned in two originals, drawn up in English.

Date 16 July 2020

Date 02/07/2020



Jeffrey L. Duerk Ph.D.  
Executive Vice President and  
Provost University of Miami



Prof. Francesco Ubertini  
Rector  
University of Bologna



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Daniel Berg

Prof. Daniel Berg  
Interim Dean, College of Engineering  
University of Miami

Antonio Nanni

Prof. Antonio Nanni  
Dual Degree Coordinator for UM  
CAE Department  
University of Miami



## ANNEX A TO THE AGREEMENT OF COOPERATION FOR THE GRANTING OF DUAL DEGREES

### 1. Dual Degree programs activated under the Agreement

Each Dual Degree program is structured in four semesters made up of courses and research, two semesters to be completed at the University of Bologna, and two semesters to be completed at the University of Miami. The Agreement applies to Master programs listed in Table 1. Reference Departments at each institution for the Dual Degree programs are Department of Civil, Chemical, Environmental and Materials Engineering (DICAM) at UNIBO and Department of Civil, Architectural and Environmental Engineering (CAE) at UM.

**Table 1: Dual Degree Programs activated under the agreement**

Dual Degree Program	Academic Degree obtained at UNIBO	Academic Degree obtained at UM
CIVIL ENGINEERING	Laurea Magistrale in Civil Engineering (Classe LM 23) - taught in English	MS in Civil Engineering
ENVIRONMENTAL ENGINEERING	Laurea Magistrale in Ingegneria per l'Ambiente ed il Territorio (Classe LM 35) – “Earth Resources Engineering” International Curriculum - taught in English	MS in Civil Engineering (Environmental emphasis)

Only the students enrolled in the above listed 4+1 (BS+MS) programs at UM will be offered the opportunity to participate in the pertinent Dual Degree program, which will enable them to register in the Laurea Magistrale at the University of Bologna, as indicated in Table 1. The students enrolled in the Lauree Magistrali at UNIBO will be offered the opportunity to participate in the pertinent Dual Degree program, which will enable them to enroll in the Master of Science at UM, as indicated in Table 1. Upon completion of Dual Degree program, the students will be awarded two separate and distinct degrees – one from each Partner university, as stated in Article 2. The specific academic degrees obtained by completing each Dual Degree program are listed in Table 1.

The study programs and the list of courses that the students enrolled in the Dual Degree program must complete are listed in the following paragraphs. Modifications to the study program may be made by mutual consent of the Program Coordinators appointed by Article 7 of the Agreement.

### 2. General conditions for all the study programs

The following conditions apply to all study programs.

If pertinent, by selecting the technical electives, denoted by “curriculum courses”, the students may focus on one of various areas of concentration where present. The study plans together with the list of curriculum courses at both parties are reported below.

In addition, the students must select “elective courses” to add up to the prescribed number of credits according to the study program. Elective courses may be selected among all the courses offered by the host institution, but students are recommended to select them among the degree courses.

Candidate students may submit an individual study program to anticipate some courses and to select elective courses that are not listed among curriculum courses. In exceptional cases, some courses may be substituted, upon valid motivation, according to individual study program. In any case, the individual study program must be approved by both parties.





As indicated in Articles 5.3, to obtain the Laurea Magistrale at UNIBO, students must defend their Master's Thesis, according to the rules and modalities of UNIBO. For each Master's program, the specific modules where the Master's Thesis will be prepared are indicated in the following paragraphs.

### 3. Mobility structure

Enrolled student who want attend the Dual Degree program will have to select one of the following paths:

- First year at University of Bologna (60 ECTS – 30 U.S. credits) and second year at the University of Miami (60 ECTS or 30 U.S. credits). To conclude the program, the student will have to defend the Master Thesis (Tesi di Laurea Magistrale).
- First year at the University of Miami (60 ECTS – 30 U.S. credits), second year at University of Bologna (60 ECTS – 30 U.S. credits). After completing the study plan, the student must fulfill the obligations at University of Bologna to defend the Master Thesis and obtain the Master Degree.

The structures of the study programs related to the paths described above are detailed in the following, separately for the two Dual Degree Programs (Civil Engineering and Environmental Engineering).

Other study programs can be followed, after approval by relevant academic bodies of the Parties

### DUAL DEGREE IN CIVIL ENGINEERING

The study program and corresponding courses offered at University of Bologna and the University of Miami are listed below.

#### UM Students

*Senior year at UM: all the courses in Table A (24 U.S., 48 ECTS) + 2 courses in Tables B and C (6 U.S., 12 ECTS)*

*Second year at UNIBO: the remaining courses in Tables B and C (24 U.S., 48 ECTS) + course in Table D (9 U.S., 18 ECTS)*

#### UNIBO Students

*First year at UNIBO: all the courses in Table A (24 U.S., 48 ECTS) + the first course in Tables B (6 U.S., 12 ECTS)*

*Second year at UM: the remaining courses in Tables B and C (24 U.S., 48 ECTS) + course in Table D (9 U.S., 18 ECTS)*

At UNIBO, the student must choose one of the two curricula.

*Curricula courses* - The curricula courses offered for Structural Engineering and Infrastructure design in river basins curricula are listed in Tables E and F, respectively.

*Elective courses* - The student must choose two elective courses among the courses of Tables E, F and G.

Each student must prepare a study plan specifying the courses selected to obtain the Degree.



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**TABLE A**

UM		UNIBO	
CAE 450 Transportation Engineering II	3	INFRASTRUCTURE SYSTEMS	9
CAE 530 Water Resources Engineering II	3	ADVANCED HYDROSYSTEMS ENGINEERING	9
CAE 470 Foundations & Earth Retaining Systems	3		
CAE 520 Adv. Design of Concrete Structures	3		
<i>and 2 courses among the following:</i>			
CAE 511 Adv. Structural Analysis	3	ADV. DESIGN OF STRUCTURES	9
CAE 521 Adv. Design of Steel Structures	3	ADV. STRUCTURAL MECHANICS	9
MAE 507 Adv. Mechanics of Solids	3		
CAE 611 Theory of Elasticity	3		
CAE 603 Master Design Projects I	3	DESIGN PROJECTS	6
CAE 570 Foundation Engineering	3	GEOTECHNICAL ENGINEERING	6

**TABLE B**

UM		UNIBO	
MAE 501 Methods of Engineering Analysis	3	NUMERICAL METHODS	12
MAE 605 Finite Element Methods	3		
CAE 460 Construction Management	3	MANAGING ENGINEERING AND CONSTRUCTION PROCESSES	6

**TABLE C**

UM		UNIBO	
Curriculum course	3	CURRICULUM COURSE	6
Curriculum course	3	CURRICULUM COURSE	6
Curriculum course	3	CURRICULUM COURSE	6
Curriculum course	3	CURRICULUM COURSE	6
Elective course	3	ELECTIVE COURSE	6
Elective course	3	ELECTIVE COURSE	6

**TABLE D**

UM		UNIBO	
CAE 402 Professional Engineering Practice	3	Final Examination	6
CAE 710 Master's Thesis	6	Preparation for the Final Examination Abroad	12

**TABLE E**

Curriculum 1 - Structural Engineering	ECTS
MECHANICS OF HISTORICAL MASONRY STRUCTURES	6
STRUCTURAL SAFETY	6
STRUCTURAL STRENGTHENING & REHABILITATION	6
COMPUTATIONAL MECHANICS	6
EARTHQUAKE ENGINEERING	6





TABLE F

Curriculum 2 - Infrastructure design in river basins	ECTS
APPLIED GEOMATICS	6
FLOOD AND DROUGHT RISK MANAGEMENT	6
GROUNDWATER AND CONTAMINATION PROCESSES	6
LARGE-SCALE WATER AND WASTEWATER STRUCTURES	6
SUSTAINABLE DESIGN OF WATER RESOURCES SYSTEMS	6
SUSTAINABLE ROAD INFRASTRUCTURES	6

TABLE G

Additional Courses	ECTS
ENGINEERING GEOLOGY	6
SCIENCE AND TECHNOLOGY OF COMPOSITE MATERIALS	6
SUSTAINABILITY IN CONSTRUCTION	6
BIOTECHNOLOGY FOR THE SUSTAINABLE RECLAMATION OF CONTAMINATED LANDS AND WATERS	6

The discussion of the Master Thesis will take place in Bologna.

### DUAL DEGREE IN ENVIRONMENTAL ENGINEERING

The study program and corresponding course offered at University of Bologna and University of Miami are listed below.

The study program and correspondence of courses offered at University of Bologna and the University of Miami are listed below.

#### UM Students

*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)

*Second year at UNIBO:* the remaining course in Table B (3 U.S., 6 ECTS) + all the courses in Table C (21 U.S., 42 ECTS) + the course in Table D (6 U.S., 12 ECTS)

#### UNIBO Students

*First year at UNIBO:* all the courses in Table A (24 U.S., 48 ECTS) + the first two courses in Tables B (6 U.S., 12 ECTS)

*Second year at UM:* the remaining courses in Tables B and C (24 U.S., 48 ECTS) + course in Table D (6 U.S., 12 ECTS)

*Elective courses* - The student must choose two elective courses among the courses offers by the Master Degree of the hosting University.

Each student must prepare a study plan specifying the courses selected to obtain the Degree.



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**TABLE A**

UM		UNIBO	
CAE542 Solid and Hazardous Waste Engineering	3	APPLIED GEOMATICS M	6
CAE430 Water-Resources Engineering I	3	ADVANCED HYDROSYSTEMS ENGINEERING M	9
CAE 530 Water Resources Engineering II	3	ENGINEERING GEOLOGY M	6
CAE540 Environmental Chemistry Processes	3	INDUSTRIAL AND ENVIRONMENTAL SAFETY M	9
CAE440 Water Quality Control Systems	3	GEOTECHNICAL ENGINEERING	6
CAE533 Water Quality Control in Natural Systems	3		
CAE 603 Master Design Projects I	align="center">3	LABORATORY OF ENVIRONMENTAL ENGINEERING AND ENERGY ECONOMICS	3
		LABORATORY ON RENEWABLE RAW MATERIALS AND CIRCULAR ECONOMY	3
CAE 402 Professional Engineering Practice	3	ENV ENGINEERING RESEARCH A	6
tot	24		tot 48

**TABLE B**

UM		UNIBO	
MAE 501 Methods of Engineering Analysis	3	INTRODUCTION TO NUMERICAL METHODS I	6
CAE541 Environmental Microbiology	3	BIOTECHNOLOGY FOR THE SUSTAINABLE RECLAMATION OF CONTAMINATED LANDS AND WATERS M	6
CAE 570 Foundation Engineering	3	RESOURCES AND RECYCLING M	6

**TABLE C**

UM		UNIBO	
CAE542 Solid and Hazardous Waste Engineering	3	INDUSTRIAL ECOLOGY M	6
CAE532 Ground-Water Hydrology	3	MINERALS PRODUCTION SYSTEMS M	6
CAE540 Environmental Chemistry Processes	3	PETROLEUM GEOSYSTEMS M	6
CAE631 Wastewater Treatment and System Design	3	WATER ENGINEERING (Flood and Drought Risk Management & Groundwater and Contamination Processes)	12
CAE530 Water-Resources Engineering II	3		
CAE531 Surface-Water Hydrology	3	ELECTIVE COURSE	6
Electives Courses	6	ELECTIVE COURSE	6



TABLE D

UM		UNIBO	
CAE 710 Master's Thesis	6	ENV ENG. RESEARCH B	12

The discussion of the Master Thesis will take place in Bologna.





ANNEX B TO THE AGREEMENT OF COOPERATION  
FOR THE GRANTING OF DUAL DEGREES

1. Course schedule for UM outbound and inbound students

Outbound student

This program is restricted to students enrolled in the 4+1 (BS + MS) program. Five-year programs leading to B.S. and dual MS/LM degrees (BS/2MS) can be completed in 10 semesters, as long as the student is making satisfactory progress.

This pilot program is open to students who are admitted to the graduate program at the end of their junior year. Students applying for this program must have a minimum grade point average of 3.0, and score more than 1,000 (300 new scale) on the Graduate Record Examination.

The UM graduate course requirements for the five-year BS/2MS program can be met as follows:

Legend: Red for MS-UM; Blue for MS-UNIBO; Green for common

Senior Year (at UM)					
1) Take PS/HA Cognate course in freshman semester;			1) Delete CAE 404; and		
2) Delete CAE 403; and			2) Add the following courses as G.:		
3) Add the following courses as G.:					
CAE 603 <sup>s</sup>	Master Design Project I	3		Graduate Level Course	3
	Graduate Level Course	3		Graduate Level Course	3
		<b>Total (12U+6G)</b>	<b>6</b>	<b>Total (12U+6G)</b>	
Graduate Year at UNIBO					
	Transfer Graduate Level Course	3		Transfer Graduate Level Course	3
	Transfer Graduate Level Course	2		Transfer Graduate Level Course	2
	Transfer Graduate Level Course	2		Transfer Graduate Level Course	2
CAE 691	Special Problems	2	CAE 691	Special Problems	2
	Graduate course for LM-UNIBO			Graduate course for LM-UNIBO	
	Graduate course for LM-UNIBO			Graduate course for LM-UNIBO	
		<b>Total</b>	<b>9</b>	<b>Total</b>	

Inbound student

The UM graduate course requirements for the Dual Degree program can be met as follows:

Legend: Red for MS-UM; Blue for MS-UNIBO; Green for common

Graduate Year at UM					
CAE 710	Master's Thesis	3	CAE 710	Master's Thesis	3
	Transfer Graduate Level Course	3		Transfer Graduate Level Course	3
	Transfer Graduate Level Course	3		Transfer Graduate Level Course	3
	Transfer Graduate Level Course	3		Transfer Graduate Level Course	3
	Transfer Graduate Level Course	3		Transfer Graduate Level Course	3
		<b>Total</b>	<b>15</b>	<b>Total</b>	



**Agreement of Cooperation for the Granting of Dual Degrees – UNIBO and UM**

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**ANNEX C TO THE AGREEMENT OF COOPERATION  
FOR THE GRANTING OF DUAL DEGREES**



The Parties establish the following conversion table of grades after the completion of a course:

Grades @ UM	Grades @ UNIBO
A+	30L
A	30
A-	28
B+	26
B	25
B-	24
C+	23
C	22
C-	21
D+	20
D	19
D-	18
F	failed / respinto
I (Incomplete)	No equivalent
W (Withdrawal)	No equivalent





Agreement of Cooperation for the Granting of Dual Degrees – UNIBO and UM

ANNEX D TO THE AGREEMENT OF COOPERATION  
FOR THE GRANTING OF DUAL DEGREES

This Annex is not part of the agreement, but only intended for clarification of its clauses.

**Flowchart - Path for UM and UNIBO students to reach the dual degree**

