

**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. Ivano Dionigi, Via Zamboni 33 Bologna 40126 Italy

**and**

**UNIVERSITE DE LIEGE** (hereafter referred to as "University of Liège" or "ULg"), represented by its Rector, Prof. Albert Corhay, Place du 20-Août, 7 - 4000 Liège, Belgium.

Collectively, the University of Liège and the University of Bologna shall be referred to as the "Parties."

It is agreed and stipulated as follows:

**Article 1 - Preamble**

WHEREAS, the Parties are interested in establishing a long-term collaboration and an academic exchange partnership in the field of Civil, Environmental and Geological 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 the ULg is organized in conformity with the decree of 7th November 2013 which defines the Landscape of Higher Education and the Academic Organization of Studies (Décret définissant le Paysage de l'enseignement supérieur et l'organisation académique des études);



REP. 4932/2015  
PROF. 73150/2015  
REQ. 674/2015

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

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

WHEREAS, the Department of Civil, Chemical, Environmental and Materials Engineering (DICAM) of the University of Bologna and the Department of Architecture, Geological, Environmental and Construction Engineering (ARGENCO) of the University of Liège have a common interest in cooperating and providing students at ULg and UNIBO with an opportunity to earn a dual degree, with one degree (Master degree) awarded by ULg 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 and staff who participate in the programme 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 Liège agree to establish an integrated two-year (four-semester) programme during which students will study for a period of two semesters at each institution (referred to as “Dual Degree Programmes”).

The students successfully completing the study programme 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 (MA, two years, 120 ECTS) granted by the University of Liège. The two degrees are awarded



separately after the student completes the individual requirements for each degree as described in Articles 5.2 and 6.3.

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

The Agreement is restricted to students enrolled in (LM Civil Engineering or LM Ingegneria per l'Ambiente e il Territorio, international curriculum Earth Resources Engineering/ Master Ingénieur Civil des Mines et Géologue or the Master Ingénieur Civil des Constructions) programmes offered by the following Departments: a) Department Of Architecture, Geological, Environmental and Construction Engineering (ARGENCO) of the University of Liège b) Department of Civil, Chemical, Environmental and Materials Engineering (DICAM) at UNIBO.

### **Article 3 – Definitions**

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

LM Civil Engineering or LM Ingegneria per l'Ambiente e il Territorio, international curriculum Earth Resources Engineering are two-year (120 ECTS credits) 2<sup>nd</sup> cycle degree offered at the University of Bologna. UNIBO offers a 3+2 Laurea-Laurea Magistrale (L-LM) programme.

Master Ingénieur Civil des Constructions or the Master Ingénieur Civil des Mines et Géologue are two-year (120 ECTS credits) 2<sup>nd</sup> cycle degrees offered at the ULg. ULg offers a 3+2 master programme (3 years of Bachelor – 2 years of Master).

Home institution or university is the University where the student is enrolled the first year of the master.

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 the student going from the Home institution to the Partner institution.

Inbound student is the student coming to the Partner institution from the Home institution.



#### **Article 4 - Conditions**

This pilot Agreement is subject to the following conditions:

Partner institutions must show that an inbound student can feasibly earn an Master Ingénieur Civil des Mines et Géologue or the Master Ingénieur Civil des Constructions /LM degree in one year abroad taking specific courses which shall be offered in English or on a “bilingual way (French-English)” for the Master Ingénieur Civil des Mines et Géologue, meaning that if the course is not taught in English, the pedagogical support will be available in English.

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.

Each year, and at the time of the publication of the course bulletin, the academic advisors (see Article 6.1) will advise one another of the current list and description of their courses (including requisites) which shall be offered in English or on a “bilingual way (French-English)”.

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 Programmes should involve an equal number of students from both Universities, whenever possible. A maximum of 5 students per year per institution is agreed.

Parties shall be able to jointly agree a higher number of participants upon a notice exchange.

UNIBO and ULG can agree to modify the number of students.

Students who qualify for entry to the Dual degree programme must have fulfilled the admission requirements for the Dual degree programme. They have:

- To be enrolled in the Master Ingénieur Civil des Mines et Géologue or the Master Ingénieur Civil des Constructions at ULg, or in the LM Ingegneria per l'Ambiente e il Territorio - curriculum Earth Resources Engineering at UNIBO or LM Civil Engineering or;
- Proof of a successful completion of their first year of second cycle (LM Civil Engineering or LM Ingegneria per l'Ambiente e il Territorio - curriculum Earth Resources Engineering at UNIBO or Master Ingénieur Civil des constructions or the Master Ingénieur Civil des mines et géologue at ULg);
- Proof of English language ability (equivalent to CEFR B2 level).

Students participating in the Dual Degree Programmes will be nominated by the Home university.

Students will then follow the procedures set by the Master Ingénieur Civil des constructions or the Master Ingénieur Civil des mines et géologue /LM Civil Engineering or LM Ingegneria per l'Ambiente e il Territorio- curriculum Earth Resources Engineering at the Partner university. The Partner university will have the sole and absolute authority over which applicants it will allow to register in its programmes and reserves the right to reject any that do not meet the standards of admission.





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

The Parties agree to use the ECTS grading system on the basis of a grading table yearly defined by the Partner Universities.



## **5.2 Specifics**

### ULg Students visiting UNIBO

- In the 2<sup>nd</sup> year of the Dual Degree programme, the ULg student will register at UNIBO, with the same rights and privileges of an enrolled student, will be admitted at the 2<sup>nd</sup> year of the programme, and transfer 60 ECTS from ULg to UNIBO.
- While at UNIBO, the ULg student will complete 60 ECTS. After completing the required courses, the student must fulfil UNIBO's requirement to defend the Master Thesis (Tesi di Laurea Magistrale), as described in Annex B.
- After completing the requirements of the Dual Degree programme (including the Master Thesis - Tesi di Laurea Magistrale), the student obtains the degree qualification at UNIBO, and can also require the award of the degree at the Home university (ULG) by submitting the relevant academic documentation (i.e. transcript of records).

### UNIBO students visiting ULg

- In the 2<sup>nd</sup> year of the Dual Degree programme, the UNIBO student will register at ULg, with the same rights and privileges of an enrolled student, will be admitted at the 2<sup>nd</sup> year of the programme, and transfer 60 ECTS from UNIBO to ULg.

- While at ULg, the UNIBO student will complete 60 ECTS. After completing the required courses, the student must fulfil ULg's requirement to defend the Master Thesis (Travail de fin d'études), as described in Annex B.
- After completing the requirements of the Dual Degree programme (including the Master Thesis - Travail de fin d'études), the student obtains the degree qualification at ULG, and can also require the award of the degree at the Home university (UNIBO) by submitting the relevant academic documentation (i.e. transcript of records).



### **5.3 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 approves its own tuition and fees for each academic year. There will be no exchange of student tuition funds between ULg and UNIBO. However, students may be required to pay administrative fees (i.e. "role et assurance" at ULg and "tassa di laurea" at UNIBO).

### **5.4 Certifications**

Host Universities shall release and grant each mobility programme student a Transcript of Records indicating his/her attended teachings and his/her academic performances and number of credits obtained at the partner University.

### **5.5 Insurance**

Both UNIBO and ULg confirm that their regularly enrolled students, and their 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 neither by Unibo nor ULg.

### **5.6 Services offered**

Students participating in the programme 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 institutions 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.

### **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 programme.

### **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. 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 Programme with the appropriate academic advisor. Subject to the approval of their advisors, the students will be permitted the same freedom of choice in course selection as enjoyed by its other degree students.

### **6.2. Defence of the Final Dissertation**

Students participating in the Dual Degree Programme will defend their Master Thesis (Travail de fin d'études/Tesi di Laurea Magistrale) at the Host University (where they have spent the 2nd year).

The Boards in charge of the final examination are defined in accordance with prevailing local regulations.

### **6.3. Release of the Degree**

Students successfully completing the requirements of the Dual Degree Programme at each institution will obtain two degrees: the Laurea Magistrale in Civil Engineering or the Laurea Magistrale in Ingegneria per l'Ambiente e il Territorio at the University of Bologna and the Master Ingénieur Civil des Mines et Géologue or the Master Ingénieur Civil des Constructions at the University of Liège.

Students participating in the study programme obtain the degree qualification at the Host University (where they have spent the 2nd year and where they have defended their final dissertation), and they can require the award of the degree at the other partner University by submitting the relevant academic documentation as soon as the article 5.2 has been fulfilled. References offices for students participating in the Dual Degree Programme are listed in the Annex C to this Agreement.

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

The Parties identify those in charge of the scientific and teaching aspects for the implementation of this agreement and references offices for students involved in the activities of the present agreement (Annex C).

#### **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.

#### **Article 9 Further collaborations**

The Parties, after assessing the compatibility of the study programmes, might extend the collaboration to other teaching paths. In that case, specific addenda to the present agreement will be stipulated.

#### **Art. 10 – Exchange of faculty members and administrative staff**

##### **10.1 Exchange modalities**

Both Universities shall regulate the reception and employment of faculty members and administrative staff participating into the mobility programme under this Agreement, in conformity with the law and juridical rules in force in the country concerned under the exchange.



Personnel concerned under this Agreement will continue to comply with the contractual obligations with the home University and will continue to receive the due remuneration and to benefit from the rights they are entitled of for their juridical position, according to the legislative norms existing in the home country.

In any case, the home University shall consider the duration of the stay as ordinary service period for all purposes.

### **10.2 Activities for teachers and administrative personnel**

Faculty members and researchers can hold courses and lectures, carry out tutorship activities, participate in seminars, be part of exam, final thesis and doctorate commissions at the partner University, and take part into research activities and meetings for student exchange programme planning, evaluation and development, held at the partner University.

The administrative staff will have the possibility of participating in meetings for student exchange programme planning, evaluation and development and will be able to carry out special visits in order to analyse the management systems operating at the partner University.

The Parties agree that all the financial agreements will have to be negotiated and will depend on the availability of funds. For the expenses concerning the mobility of teaching staff members and research fellows, each university will cover all the costs for their own professors and research fellows according to the availability of Erasmus+ Programme funds or other funds for research.

During their period at the hosting University, the faculty members and the researchers participating in said exchange, to carry out the above-mentioned activities, shall be considered as staff “on a mission” abroad.



### **10.3 Insurance obligation**

The Parties state that their employees and staff (teachers and administrative personnel) will be insured against incidents that they may suffer during their stay abroad, for the activities under this Agreement, and for the civil liability for damage which they may involuntarily cause to third parties (people or their properties).



### **Article 11 – 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 2015/16 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 programme during academic year 2016/2017 until 2021/2022. 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 programme. The Annexes can be modified by mutual consent between the Parties in writing, to no detriment to the students already enrolled.

### **Article 12 – 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.

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

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

Date .....1.7. SET. 2015.....

Rector Prof. Ivano Dionigi

Alma Mater Studiorum Università  
di Bologna

Date .....01 SEP. 2015.....

Rector Prof. Albert Corhay

Université de Liège



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



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

Each Dual Degree programme 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 Liège. The Agreement applies to Master programmes listed in Table 1.

Dual Degree Programme	Academic Degree obtained at UNIBO	Academic Degree obtained at ULg
CIVIL ENGINEERING	Laurea Magistrale in Civil Engineering (Classe LM 23)	Master Ingénieur Civil des Constructions
ENVIRONMENTAL ENGINEERING	Laurea Magistrale in Ingegneria per l'Ambiente ed il Territorio (Classe LM 35)	Master Ingénieur Civil des Mines et Géologue

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

Only the students enrolled in the above listed programmes will be offered the opportunity to participate in the pertinent Dual Degree programme. Upon completion of Dual Degree programme, 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 programme are listed in Table 1.

The study programmes and the list of courses that the students enrolled in the Dual Degree programme must complete are listed in the following paragraphs. Modifications to the study programme may be made by mutual consent of the Programme Coordinators appointed by Annex C of the Agreement.



## **2. General conditions for all the study programmes**

The following conditions apply to all study programmes.

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 in annex B.

In addition, the students must select “elective courses” to add up to the prescribed number of credits according to the study programme. 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 programme 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 programme. In any case, the individual study programme must be approved by both parties.

The Parties agree to use the ECTS grading system on the basis of a grading table yearly defined by the Partner Universities.

## **3. Mobility structure**

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

### ULg Students visiting UNIBO

- In the 2<sup>nd</sup> year of the Dual Degree programme, the ULg student will register at UNIBO, with the same rights and privileges of an enrolled student, will be admitted at the 2<sup>nd</sup> year of the programme, and transfer 60 ECTS from ULg to UNIBO.
- While at UNIBO, the ULg student will complete 60 ECTS. After completing the required courses, the student must fulfil UNIBO's requirement to defend the Master Thesis (Tesi di Laurea Magistrale), as described in Annex B.
- After completing the requirements of the Dual Degree programme (including the Master Thesis - Tesi di Laurea Magistrale), the student obtains the degree qualification at UNIBO, and can also require the award of the degree at the Home university (ULG) by submitting the relevant academic documentation (i.e. transcript of records).

### UNIBO students visiting ULg

- In the 2<sup>nd</sup> year of the Dual Degree programme, the UNIBO student will register at ULg, with the same rights and privileges of an enrolled student, will be admitted at the 2<sup>nd</sup> year of the programme, and transfer 60 ECTS from UNIBO to ULg.
- While at ULg, the UNIBO student will complete 60 ECTS. After completing the required courses, the student must fulfil ULg's requirement to defend the Master Thesis (Travail de fin d'études), as described in Annex B.
- After completing the requirements of the Dual Degree programme (including the Master Thesis - Travail de fin d'études), the student obtains the degree qualification at ULG, and can also require the award of the



degree at the Home university (UNIBO) by submitting the relevant academic documentation (i.e. transcript of records).

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

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



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



8894 -Environmental engineering - Course schedule for outbound ULg students

1<sup>st</sup> YEAR

ULg	ECTS	UNIBO	ECTS	TAF
Groundwater quality and protection	3			
Groundwater modelling	5	Advanced Hydrosystems Engineering – ICAR/02	9	B
Determinative mineralogy	3	Petroleum Geosystems M – ING-IND/30	6	B
Rocks and sedimentary processes	3			
Numerical methods in Civil and Geological Engineering, Linear methods	4	Introduction to Numerical Methods – MAT/08	6	C
Geostatistics	5			
Rock mechanics, tunnels, rock slopes, rock foundations	5	Geotechnics And Geology - Geotechnical Engineering M – ICAR/07	6	B
Exploiting deposits, quarries and mines	2			
Tectonics	3	Geotechnics And Geology - Engineering Geology M – GEO/05	6	B
Geology of Wallonia	3			
Analytical chemistry	5	Biotechnology For The Sustainable Reclamation Of Contaminated Lands And Waters M – CHIM/11	6	C
Geological mapping	5	Industrial Ecology M - ING-IND/25	9	B
Solid waste processing	3			
Applied geophysics	5	Laboratory of Environmental Engineering	3	F
Building materials	3	Laboratory On Alternative And Renewable Raw Materials	3	F
Site investigation	3	Environmental Engineering Research A	6	E
	<b>60</b>		<b>60</b>	

2<sup>nd</sup> YEAR

ULg	ECTS	UNIBO	ECTS	TAF
Modelling and inversion in geophysics	3			
Recycling of waste and industrial by production systems	3	Resources And Recycling - ING-IND/29	6	B
Natural Risk	3			



Environmental geotechnics	3	Minerals Production Systems M – ING-IND/28	6	B
one of two between: Process mineralogy Remediation of Contaminated Sites	4			
Remote sensing and geological imaging	5	Applied Geomatics – ICAR/06	6	B
Environmental aspects of industrial and mining activities	4	Industrial Safety M – ING-IND/25	6	B
One of two between: Introduction to free surface flows Origin and production for Hydrocarbons	2			
External placement	5	Water engineering – I.C. - Flood and drought risk management - ICAR/02 Groundwater and contamination processes - ICAR/01	12	B
Environmental geotechnics	3			
Integrated project in geological Engineering	5			
Management for Engineering	4	Elective Courses*	6	D
Final Thesis	20	Environmental Engineering Research A +B (Thesis)	18	E
	<b>60</b>		<b>60</b>	

Elective Courses @ UNIBO	ECTS	TAF
Geotechnical Engineering - ICAR/07	6	B
Industrial Ecology - ING-IND/25	9	B
Context-Sensitive Design in Transportation Infrastructures - ICAR/04	6	D
Material Characterization and Laboratory - ING-IND/22	6	D
Sustainability in Construction - ICAR/09	6	D
Photocatalytic processes and Environmental Applications - ING-IND/24	3	
Laboratory on Alternative and renewable raw materials	3	F
Laboratory of Environmental Engineering	3	F



Environmental engineering – Course schedule for outbound UNIBO students



1<sup>st</sup> YEAR

UNIBO	ECTS	TAF	Ulg	ECTS
			Groundwater quality and protection	3
Advanced Hydrosystems Engineering – ICAR/02	9	B	Groundwater modelling	5
Petroleum Geosystems – ING-IND/30	6	B	Determinative mineralogy	3
			Rocks and sedimentary processes	3
Introduction to Numerical Methods – MAT/08	6	C	Numerical methods in Civil and Geological Engineering, Linear methods	4
			Geostatistics	5
Geotechnics And Geology – Geotechnical Engineering M – ICAR/07	6	B	Rock mechanics, tunnels, rock slopes, rock foundations	5
			Exploiting deposits, quarries and mines	2
Geotechnics And Geology – Engineering Geology M – GEO/05	6	B	Tectonics	3
			Geology of Wallonia	3
Biotechnology For The Sustainable Reclamation Of Contaminated Lands And Waters M – CHIM/11	6	C	Analytical chemistry	5
Industrial Ecology M – ING-IND/25	9	B	Geological mapping	5
			Solid waste processing	3
Laboratory of Environmental Engineering	3	F	Applied geophysics	5
Laboratory On Alternative And Renewable Raw Materials	3	F	Building materials	3
Environmental Engineering Research A	6	E	Site investigation	3
				<b>60</b>

2<sup>nd</sup> YEAR

UNIBO	ECTS	TAF	Ulg	ECTS
Resources And Recycling - ING-IND/29	6	B	Solid waste and by-product processing	5
Minerals Production Systems - ING-IND/28	6	B	Process mineralogy	5
Applied Geomatics ICAR/06	6	B	Geological mapping	5
Industrial Safety ING-IND/25	6	B	Environmental impact of Industrial and Mining activities	5



Water engineering – I.C. - Flood and drought risk management - ICAR/02	6	B	Geothermy	5
Water engineering – I.C. - Groundwater and contamination processes - ICAR/01	6	B	Choose one of the two: 1) Geohazard assessment and geomorphology OR 2) Exploitation of mineral deposits	5
Elective Courses	12	D	Elective Courses	10
Environmental Engineering Research B (Thesis)	12	E	Final Thesis	20
	<b>60</b>			<b>60</b>

Elective Courses @ ULg	ECTS
Geological imaging and inverse modelling	5
Geostatistics	5
Analytic mineralogy	5
Groundwater modelling	5
Site investigation	5
Groundwater quality and protection	5
Site remediation	5
Internship	5



## 8895 - Civil Engineering - Course schedule for outbound ULg students



### 1° YEAR

ULg	ECTS	UNIBO	ECTS	TAF
Hydrodynamique fluviale (5) Ecoulements à surface libre (5) Conception et exécution des écluses et barrages fixes (5)	15	Advanced hydrosystems engineering – ICAR/02	9	B
Analyse des structures I (5) Analyse des structures II (5)	10	Advanced structural mechanics - ICAR/08	9	B
Méthodes numériques	5	Numerical methods –MAT/08	12	C
Structures en béton (5) Structures métalliques et mixtes (5) Conception et exécution des bâtiments(5)	15	Advanced design of structures- ICAR/09	9	B
Mécanique des sols et des roches (5) Conception et exécution des ouvrages géotechniques (5)	10	Geotechnical engineering- ICAR/07	6	B
		Infrastructure systems- ICAR/05	9	B
Sélection des matériaux	5	Science and technology of composite materials	6	D
	<b>60</b>		<b>60</b>	

### 2° YEAR

Compulsory courses:

ULg	ECTS	UNIBO	ECTS	TAF
Conception et execution des infrastructures routières (3)	3	Geotechnical engineering – ICAR/07	6	B
Management	5	Managing engineering and construction processes - ING-IND/35	6	C
Master Thesis	25	Civil engineering research A (6)+B (12)	18	E
	<b>33</b>		<b>30</b>	

Elective courses: choose 18 CREDITS AMONG ONE ONLY OF THE FOLLOWING GROUPS (STRUCTURAL ENGINEERING OR INFRASTRUCTURE DESIGN IN RIVER BASINS):



18 CREDITS (3 SUBJECTS) GROUP  
**STRUCTURAL ENGINEERING**  
 TAF B

ULg	ECTS	UNIBO	ECTS	TAF
	3	Mechanics of historical masonry structures – ICAR/08	6	B
Flood risk management (3) Environmental impacts of constructions (3)	6	Structural safety– ICAR/09	6	B
Nonlinear finite elements	3	Computational mechanics – ICAR/08	6	B
Seismic design (3)	3	Earthquake engineering – ICAR/09	6	B
Maintenance and repair of existing structures (3)	3	Struct. Strengthening & rehabilitation – ICAR/09	6	B
		Design of large sc. Struct– ICAR/09	6	B
			<b>18 / 36</b>	

18 CREDITS (3 SUBJECTS) GROUP  
**INFRASTRUCTURES DESIGN IN RIVER BASINS**  
 TAF B

ULg	ECTS	UNIBO	ECTS	TAF
Topographie : instruments et méthodes (GEOG0232-4)	6	Applied geomatics– ICAR/06	6	B
Transport et mobilité urbaine	6	Context-sensitive design in transportation infrastructures– ICAR/04	6	B
Hydrogéologie appliquée (4) Risques hydrologiques : inondations, flux boueux et surexploitation des nappes aquifères (3)	7	Sustainable design of water resources systems ICAR/02	6	B
		Engineering geology– GEO/05	6	D
GEOL0083-3 Groundwater modelling	5	Water engineering – I.C. - Groundwater and contamination processes - ICAR/01	6	B
Risques hydrologiques : inondations, flux boueux et surexploitation des nappes aquifères (3) Risques naturels en milieu côtier : érosion littorale, protection des installations portuaires, subsidence naturelle ou induite, intrusion des eaux salées, impact du changement climatique, tsunami (3)	6	Water engineering – I.C. - Flood and drought risk management – ICAR/02	6	B
			<b>18 / 36</b>	



Elective subjects in Bologna (12 ECTS) – TAF D

ULg	ECTS	UNIBO	ECTS
Choix et optimisation des materiaux	5	Science and technology of composite materials ING-IND/22	6
Remediation of contaminated sites	4	Biotechnology for the sustainable reclamation of contaminated lands and waters ICAR/03	6
Impacts environnementaux des constructions	3	Sustainability in construction (SASICE) ICAR/09	6
			<b>12 / 18</b>



## Civil Engineering - Course schedule for outbound UNIBO students



### 1° YEAR

UNIBO	TAF	ECTS	ULg	ECTS
Advanced hydrosystems engineering ICAR/02	B	9	Hydrodynamique fluviale (5) Ecoulements à surface libre (5) Conception et exécution des écluses et barrages fixes (5)	15
Advanced structural mechanics ICAR/08	B	9	Analyse des structures II	5
Numerical methods MAT/08	C	12	Methodes numériques (4)	4
Advanced design of structures ICAR/09	B	9	Constructions en béton (5) Constructions métalliques et mixtes (5) Timber structures (3) Conception et exécution des bâtiments (5)	18
Geotechnical engineering ICAR/07	B	6	Mecanique des sols et des roches	5
Civil engineering research A	E	6	Stage (master ii)	5
Infrastructure systems ICAR/05	B	9	Conception et exécution des structures et des ponts (3) (master ii) Fundamentals of transportation (3) (master ii)	6
		<b>60</b>		<b>58</b>

### 2° YEAR

#### Compulsory courses

UNIBO	ECTS	TAF	ULg	ECTS
Design projects	6	F	Projet intégré	7
Managing engineering and construction processes – ING-IND/35	6	C	Management	5
Civil engineering research A (TAF E) + 1 elective (6 ECTS)	18	E	Travail de fin d'études	25
			Conception et execution des ponts	3
			Conception et execution des réseaux hydrauliques et barrages mobiles	3
Context-sensitive design in transport. ICAR/04	6	D	Conception et exécution des infrastructures routières	3
	<b>36</b>			<b>46</b>

Elective courses: Choose 15 credits amongst:

Elective Courses @ ULg	ECTS
Voies navigables	3
Ouvrages geotechniques	5
Conception structurale	3
Tcb III	4
Gc accidentelles et except.	4
Batiments acc. Et except.	5

		15/24
Elective Courses @ ULg		ECTS
Seismic Engineering		3
Ports & Waterways		3
Planning of construction works		3
Maintenance and repair of structures		3
Nonlinear finite elements		3
Flood Risk Management		3
Timber structures		3
Experimental geotechnics		3
Environmental impacts of constructions		3
Fire Engineering		3
Fundamentals of transportation		3
		15/33





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

**Responsible for scientific and teaching aspects**

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