



BI-NATIONALLY SUPERVISED PhD THESIS COLLABORATION AGREEMENT

between

The University of Salerno located in Fisciano (Salerno), Via Giovanni Paolo II, 132 represented by his Rector prof. Vincenzo Loia and the University of Castilla-La Mancha represented by the Rector, Professor José Julián Garde López-Brea.

For the University of Salerno

Having regard of the:

- Law no. 210, July 3rd 1998 in force of which Italian Universities may regulate procedures for setting up PhD courses with complete organizational, educational and scientific autonomy;
- Ministerial decree no. 45, February 8th 2013 about the normative of PhDs;
- Ministerial decree no. 270, October 22nd 2004 about the academic autonomy of the Universities;
- The Rector's decree no. 2845, October 8th 2013 of the University regulations of the PhD.

For the University of Castilla-La Mancha

Having regard of the:

- Royal decree no. 822/2021, September 28th 2021 establishing the organization of university education and the quality assurance procedure;
- Organic Law no. 6, December 21st 2001 about the academic autonomy of the Universities;
- Royal decree no. 99, January 28th 2011 about the normative of PhDs;
- Ministerial decree no. 13, February 17th 2009 about the approval procedures of the academic curricula within the Autonomous Community of Castilla-La Mancha in the framework of the European Higher Education Area;
- The determination no. 5076, April 22nd 2015 by the General Secretariat of the Universities, publishing the ministerial agreement of April 17th 2015, about the officiality of the University qualifications;
- Ministerial decree no. 5, February 25th 2015 about the introduction of the PhD course: "Territorio, Infraestructura y Medio Ambiente" at the UCLM.

Considering that promoting international cooperation in studies and research and developing scientific cooperation between the two Countries, through the PhD student mobility, are the main goals of both Institutions agree as follows:

FIRST PART – Administrative details

Art. 1

The University of Salerno (Italy) and the University of Castilla-La Mancha (Spain) hereinafter referred to as "Institutions" agree through the present agreement, to abide by

the regulations in force in each country and in each Institution and organize jointly a bi-nationally supervised PhD thesis concerning:

Ms: Anna Sanseverino

Nationality: Italian

Born in: Avellino (AV),

On: 13/08/1988

holding the following academic qualification "Laurea Specialistica a ciclo unico" in Building Engineering-Architecture enrolled in a PhD course at the University of Castilla-La Mancha and at the University of Salerno.

Art. 2

At the University of Salerno the student will be enrolled in the PhD course in Risk and Sustainability in Civil, Architectural and Environmental Engineering Systems, cycle n. XXXIV (legal duration from 01.11.2018 to 31.10.2021).

At the University of Castilla-La Mancha the student will be enrolled in the PhD in "Territorio Infraestructura y Medio Ambiente" (legal duration from 01.12.2021 to 01.12.2024).

Unless otherwise agreed, fees will be paid only at the University of Salerno. However, whilst the doctoral candidate develops stated tasks in the preparation of their doctoral dissertation at the UCLM, s/he must pay the tuition fees in this University in the corresponding academic years. So, at least on one occasion, the enrolment fee must be paid at the UCLM.

Thesis title: "*Application of BIM methodology for structural inspection and maintenance*".

(The above mentioned issues will also be detailed in the attached Annex)

Art. 3

The PhD student is in charge of taking care of the administrative duties related to both the PhD courses he/she is attending, including the enrolment procedure and the application for the final exam or the PhD extension.

Art. 4

According to the rules and regulations in force in the host country, the participant in the exchange must give evidence of the insurance policies covering her from any health problem and any accident they may occur during her stay.

At the same time, the student will be responsible of acquiring a repatriation insurance in case of illness or accident to occur during the movility periods at the UCLM.

Insurance policies may also be issued by the sending Institution according to its own rules or purchased directly by the participant in the exchange.

SECOND PARTS – Academic details

Art. 5

The PhD course lasts three years.

The PhD student will carry out research activities at both Institutions under the supervision of:

- Prof Barbara Messina (Professors at the University of Salerno - Department of Civil Engineering);
- Prof Salvatore Barba (Professors at the University of Salerno - Department of Civil Engineering);

- Prof José Antonio Lozano Galant (Professor at the University of Castilla-La Mancha - UCLM - Department of ETS de Ingenieros de Caminos, Canales y Puertos).

The preparation of the thesis will be carried out in both Institutions in alternating periods as described below:

- University of Salerno: from 01.11.2018 to 31.10.2021 (3 years)
- University of Castilla-La Mancha: from 01.03.2021 to 30.09.2022 (1,5 years)

The subject of the jointly supervised PhD dissertation is: Bridge Engineering.

Art. 6

Each Institution will appoint a local Coordinator to coordinate and manage all the activities undertaken in the framework of the Agreement and to monitor the results achieved. The activities carried out will be fully recognized by the sending Institution.

The examination Committee, appointed by the legal representatives of both Institutions, will be composed in accordance with the rules in force in both countries and Institutions.

Art. 7

The final dissertation will be presented in front at the examination Committee at the University of Salerno.

The dissertation will be drafted and presented in English. A written summary and the conclusions in Spanish and Italian will be added to it. The oral discussion of the thesis shall be done in English.

After the thesis dissertation and following up the positive evaluation of the examination Committee, the two Institutions will award two different final degrees.

The University of Salerno will award a PhD degree in: Risk and Sustainability in Civil, Architectural and Environmental Engineering Systems.

The University of Castilla-La Mancha will award a PhD degree "Doctor por la Universidad de Castilla La-Mancha", with reference to PhD in Territory, Infrastructure and Environment.

THIRD PART – Conclusions

Art. 8

As for the deposit, description and reproduction of the thesis both Institutions will abide by the rules and regulations in force in each country.

The intellectual property (protection of the thesis, publication exploitation and protection of the results obtained by the candidate's research in the Institutions involved in the agreement) shall be subject to rules and regulations in force in each country.

Provisions concerning intellectual property rights can be agreed upon in specific protocols or documents, if requested.

Art. 9

This agreement will enter in force as of the signatures of both Institutions. It will be valid up to the dissertation of the PhD student's thesis and to the awarding of the title by both Institutions.

Any modification to the agreement needs the written approval of the relevant Academic Bodies.

Art. 10

Disputes on interpretation and execution of this Agreement will be solved by a Committee composed by one member designated by each of the Parts, plus one member jointly designated.

Art. 11

Unless otherwise agreed, the Agreement is drawn up in English in 2 copies, one for each part involved in the Agreement.

University of Salerno

Signature of the Legal Representative

Rector:

Prof. Vincenzo Loia

Director of the Doctoral School:

Prof. Fernando Fraternali

Co-supervisor of the PhD candidate:

Prof. Barbara Messina

Fisciano, date

University of Castilla-La Mancha

Signature of the Legal Representative

Rector:

Prof. José Julián Garde López-Brea

Director of the Doctoral School:

Prof. Chengxiang Yu

Co-supervisor of the PhD candidate:

Prof. José Antonio Lozano Galant

Ciudad Real, date

ANNEX BI-NATIONALLY SUPERVISED PhD THESIS

Personal details

Surname: Sanseverino
Name: Anna
Date of birth: 13/08/1988
Sex: Female
Nationality: Italian
ID number: CA00787EC
Address: Via San Pompilio Pirrotti, n. 16
Phone no: +39 338 2574253; +39 0825 74878
Email: asanseverino@unisa.it

Academic details

Home Institution: University of Salerno

Master Degree in Building Engineering-Architecture
Date and place of the obtained degree 23/07/2018, Fisciano (SA)
Grade: 110 cum laude
Thesis Supervisor: Prof Enrico Sicignano
Thesis title: "MNEMOSINE. Riquilificazione di un opificio nella città di Villa Maria – Córdoba - Argentina"

PhD Qualification: Risk and Sustainability in Civil, Architectural and Environmental Engineering Systems
Scientific disciplinary sector: ICAR17
Series (registration year): cycle n.XXXIV (from 2018)
Department/Scientific structure: Department of Civil Engineering
Thesis Supervisor: Prof. Barbara Messina
Thesis Co-Supervisor: Prof. Salvatore Barba
Thesis title: "Application of BIM methodology for structural inspection and maintenance"

Host Institution: University of Castilla-La Mancha

PhD Qualification: Territorio, Infraestructuras y Medio Ambiente
Scientific disciplinary sector: Bridge Engineering
Cycle Year of enrolment: 2021
Department/Scientific structure: ETS de Ingenieros de Caminos, Canales y Puertos
Thesis supervisor: Prof. José Antonio Lozano Galant
Thesis title: "Application of BIM methodology for structural inspection and maintenance"

DEGREE TO OBTAIN

- *Joint degree:*
- *Double degree:*

SUBJECT OF THE PHD THESIS (maximum 2 pages)

The candidate currently enrolled in the PhD Course of "Risk and Sustainability in Civil, Architectural and Environmental Engineering Systems" at the University of Salerno, will proceed, a result of the present agreement, to enrol at the PhD Course of "Territorio, Infraestructura y Medio Ambiente" at the University of Castilla-La Mancha. The aim of her PhD Thesis is to improve the inspections and maintenance protocols for structures using the Building Information Modelling methodology. The first step of the present research is a recognition of the state of the art regarding the use of BIM for structural health monitoring of Bridges, also known in literature as Bridge Information Modelling or BrIM, and peculiar type of isostatic structures. An urban contextualization is mandatory for structural monitoring application, thus further research will concern an assessment of the level of integration between BIM and GIS (Geographic Information System). Therefore, the motivations of the bi-nationally supervision and the enrolment in a PhD Course that specifically focus on the territory, the infrastructures and the environment become clear. The objective of the thesis will be to develop a more efficient way to catalogue and keep trace of the structural elements, constantly implementing the data coming from inspections and on-site sensors. An application will include the identification of each element employing a tag system (as such QR codes or RFID tag), so to be easily recognized during on-site inspections and, additionally, to connect the physical system to the model and the related information, via low-cost sensors. The most suitable BIM tools to adopt are currently under investigation, as much as the algorithm to achieve the full bidirectional flow of information between the physical model and his digital twin. The research will be mostly carried out in Italy by the University of Salerno, foreseeing a constant exchange with the Spanish University, and having the PhD Candidate already spent a ten-month mobility by said university, while deepening her knowledge of the BIM technology applied to infrastructures. Eventually the thesis will be written and discussed in English.

DURATION OF STAY

Lenght of mobility (in weeks) 32 weeks

Scholarship Facilities Boarding Lodging ETC., provided by:

Home Institution: University of Salerno

Scholarship Facilities Boarding Lodging ETC., provided by:

Host Institution: Universidad de Castilla-La Mancha

University of Salerno

University of Castilla-La Mancha

Department of Civil Engineering

ETSI de Caminos, Canales y Puertos

Signature

Signature