European Masters Programme in Software Engineering

Free University of Bozen-Bolzano, Italy (UNIBZ)

University of Oulu, Finland (OY)

Technische Universität Kaiserslautern, Germany (UNIKL)

Universidad Politécnica de Madrid, Spain (UPM)

Call for Student Applications

Edition: EMSE 2016-2018

Deadline March 3rd, 2016

Application web site: http://em-se.eu
Online Application at: https://emse.inf.unibz.it/submissions/index.php

1. OVERVIEW

The Consortium of the Free University of Bozen-Bolzano, Italy (UNIBZ), the University of Oulu, Finland (OY), Technische Universität Kaiserslautern, Germany (UNIKL), Universidad Politécnica de Madrid, Spain (UPM) offers a twoyear (120 ECTS credits) Joint Masters Programme, named European Masters Programme in Software Engineering (**EMSE**).

1.1. DESCRIPTION OF THE PROGRAMME

The EMSE curriculum covers a wide range of topics, such as software process management, verification and validation, software design, and requirements engineering, and advanced topics including software quality, distributed systems and development, global software development, embedded systems, and open source software & agile development.

1.2. STRUCTURE OF THE PROGRAMME

The curriculum consists of modules (divided into foundations and advanced topics in software engineering), an internship, a summer school, and a master thesis.

The full structure can be accessed at http://em-se.eu/index.php/the-programme/

The programme foresees a mobility period in two different universities of the Consortium. A **mobility track** is one of such mobility period where the student will spend one year in one university (i.e., **first university**) and one year in another university (i.e., **second university**). A **learning path** is a study plan defined on a specific mobility track. The learning paths are accessible at http://em-se.eu/index.php/study-plan/

Internship and thesis work will be carried out at the second year. Thesis work will be jointly supervised and evaluated by two supervisors, one from each university.
(for more information see http://em-se.eu/index.php/exams-and-thesis/)

1.3. GRADUATES' PROFILE

Overall, students will gain a solid knowledge to be applied as managers in software companies or IT specialist or applied researchers in academia. The programme prepares students to continue with doctoral studies in Empirical Software Engineering (ESE) as well. The typical profiles of an EMSE graduate include:

- **Software Engineer (SE)** whose duties include work in the areas of user and systems requirements and analysis, software design, development, and maintenance, software process management, and maintenance of information systems, also in non-IT environments;
- **Information Technology (IT) manager** whose duties include the management of information systems of any level of complexity and size;
- **Researcher in Empirical Software Engineering (ESE)** in public and private research centres or universities whose work comprises the empirical investigation of the quality of software processes and systems of any level of complexity and size.

1.4. LEARNING OUTCOMES

A successful student will be able to

- Have solid knowledge of theoretical foundations in Software Engineering (SE) and their application in the several informatics domains; have knowledge of techniques and methods of design, development, test, and maintenance of information systems and be able to apply them in different contexts, also not typically IT, where the software technology is anyway crucial;
- Be able to analyse and solve problems in SE of several different levels of complexity with specific focus on empirical investigation; that is, employ the scientific methods of investigation in SE; in particular understand and use mathematical instruments that support ESE and its practice;
- Have basic knowledge of public, corporate and professional cultures and societies in Europe;
- Have practice in various software applicative sectors in the socio-economic context including the non-IT specific like health, automotive, energy;
- Be able to work in large autonomy also managing projects and infrastructures over different platforms, like cloud, distributed, or mobile systems;
- Have a command of the SE technical knowledge and skills necessary to practice as software developer;
- Have a command of the SE management skills needed to organize and control software project team work;
- Be able to reconcile conflicting project objectives providing reasonable cost and time information;
- Overcome the challenges of global software development and internationalization.

The international dimension of the Masters Course guarantees that students familiarise with different educational methods and multi-culture.

1.5. LANGUAGE

All courses are taught in English. Students are requested to acquire language skills in a local language (e.g., by passing an exam) of each university visited.

1.6. STARTING TERM

The term starts between August – October depending on the first university regulation.

1.7. MASTERS DEGREE AWARDED BY THE PROGRAMME

Upon the successful completion of the curriculum and fulfilment of the Masters course requirements, students will be awarded a double degree, one for each university they have visited. The official names of the awarded degrees are:

- Master of Science in Computer Science (Laurea Magistrale) from the Free University of Bozen-Bolzano (Italy)

- Master of Science in Computer Science from the Technische Universität Kaiserslautern (Germany)

- Master Universitario en Ingeniería del Software - European Master on Software Engineering from the Universidad Politécnica de Madrid (Spain)

- Master of Science in Information Processing Science from the University of Oulu (Finland)

2. ADMISSION

Applicants are admitted to EMSE programme regardless of sex, age, or nationality. To be admitted, applicants need to fulfil the **admission criteria**.

2.1. ADMISSION CRITERIA

In order to be admitted, applicants must fulfil the following requirements:

- **Meet the application deadline**.

- **Indicate the preferred mobility track**

- **Have excellent academic background**. Candidates will be evaluated on the basis of their curriculum vitae, academic grades, professional experience, motivation letter explaining their education and professional objectives, and letters of recommendation.

- **Have been awarded a BSc in Software Engineering**, Computer Science or Computer Engineering or degrees with equivalent skills in the three areas (Software Engineering, Computer Science or Computer Engineering) by an internationally recognized university-level institution. Applicants who have not completed their first level degree yet, but are expected to graduate before **July 31st, 2016**, are allowed to apply to the current call for application. However, if selected, to be admitted to the program they will have to provide a copy of the first-level degree certificate before **July 31st, 2016**.

- **Provide proof of proficiency in English language at level B2.2 (CEFR).**
  - o With one or more of the following internationally recognized certificates, issued no more than 5 years before application deadline date: TOEFL (>=567 (paper based), >=227 (computer-based), or >=87 (internet-based)), IELTS (>=6.0) or equivalent certificates. For more information regarding "Equivalent certificates", applicants are advised to check at http://em-se.eu/wp-content/uploads/2015/11/English_certificate_conversion.pdf
  - o With university declaration of undergraduate studies in English: applicants who have received a degree from a university-level institution where the official teaching language is English must submit a declaration issued by the same University stating that English is the official language of the respective program of degree at level B2.2 or equivalent.
  - o With country of origin certification: applicants who are citizens and first-degree-holders of the following English speaking countries Antigua & Barbuda, Australia, Bahamas, Barbados, Belize, Canada, Gambia, Ghana, Grenada, Guyana, Republic of Ireland, Jamaica, Kiribati, Liberia, Mauritius, Micronesia, New Zealand, Nigeria, Papua New Guinea, St. Kitts-Nevis, St. Lucia, St. Vincent, Sierra Leone, Solomon Islands, Trinidad & Tobago, Uganda, United Kingdom, United States of America, Zambia or Zimbabwe must submit a document attesting their country of origin.
  - o The consortium may request an assessment of the student's English level during the selection interview.

Candidates from India, Pakistan and Bangladesh are advised to contact in advance the relevant Italian diplomatic Representation in their country of residence in order to confirm the documentation required for the pre-enrolment procedure in case of acceptance.

In order to proof their eligibility for the admission criteria, applicants must submit on line the following digital documents that must be conformant to the originals:
- A copy/photocopy of English proficiency certificate

- Curriculum Vitae (European format)
- Proof of nationality (copy of passport)
- Proof of place of residence (e.g., residence certificate)
- Certified (translated in English) copy of university diploma
- Certified (translated in English) copy of transcript of study results (subjects taken during their degrees, along with the marks obtained and the number of hours/credits devoted to each subject)
- Motivation letter
- Recommendation letters and references

2.2.   SELECTION CRITERIA

Candidates that fulfil the admission criteria will be ranked according to the following selection criteria:

- Language skills
- Type of entrance qualification
- Academic records
- Work experience and professional qualifications
- Motivation and willingness, curriculum vitae, recommendation letters and references

3. PARTICIPATION COST (EMSE TUITION FEE)

For each academic year, the tuition fees are EUR **6000** for <u>Partner country</u> students and EUR **4250** for <u>Programme country</u> Students.

Programme country students (**PrC**): are applicants

- Whose citizenship is one of European Union, Turkey, the former Yugoslav Republic of Macedonia (FYROM), and the European Economic Area / European Free Trade Association (Iceland, Liechtenstein, Norway). The list of programme countries is available at http://em-se.eu/wp-content/uploads/2015/11/PartnerProgrammeCountryList.pdf
- Partner Country students who are/have been residents or have carried out their main activity (studies, training or work) for more than a total of 12 months over the last five years in any Programme Country are considered as Programme Country students. The five-year reference period for this 12-months rule is calculated backwards as from the submission deadline (3rd March 2016) of applying for a scholarship.

Partner country students (**PaC**): are all the applicants

- Whose citizenship is **NOT** one of European Union, Turkey, the former Yugoslav Republic of Macedonia (FYROM), and the European Economic Area / European Free Trade Association (Iceland, Liechtenstein, Norway). The list of partner countries is available at http://em-se.eu/wp-content/uploads/2015/11/PartnerProgrammeCountryList.pdf
- Partner Country students who are/have **NOT** been residents **NOR** have carried out their main activity (studies, training or work) for more than a total of 12 months over the last five years in any Programme Country are considered as Partner Country students. The five-year reference period for this 12-months rule is calculated backwards as from the submission deadline (3rd March 2016) of applying for a scholarship.

Students with a double nationality (of a Partner and of a Programme Country) must specify their nationality under which they submit their scholarship application.

The tuition fee covers: the European insurance cost, social taxes, cost for one local language course per year, and university services according to the local regulations of each university visited (e.g., access to library, computer laboratories, wi-fi, Internet, alumni associations, university sport associations).

Students that are not awarded an Erasmus Mundus scholarship will obtain a support to travel for the Summer school.

4. ERASMUS MUNDUS SCHOLARSHIP

For the edition 2016-2018, **14** Erasmus Mundus scholarships are offered to **Partner country applicants (PaC)** and **4** Erasmus Mundus scholarships to **Programme country applicants (PrC)** distributed over the mobility tracks as in the following tables:

Scholarship distribution over mobility tracks

PaC		Second year				
		UNIBZ	UNIKL	OY	UPM	Total
First year	UNIBZ	0	1	1	1	3
	UNIKL	2	0	1	1	4
	OY	1	1	0	1	3
	UPM	1	1	2	0	4
	Total	4	3	4	3	14

PrC		Second year				
		UNIBZ	UNIKL	OY	UPM	Total
First year	UNIBZ	0	1	1	0	2
	UNIKL	1	0	0	0	1
	OY	0	1	0	0	1
	UPM	0	0	0	0	0
	Total	1	2	1	0	4

How to read the tables: columns are second year universities, rows are first year universities. Thus, the first column and second row of the first table indicates that there are 2 scholarships for Partner Country students attending the first year at UNIKL and the second year at UNIBZ.

Applicants must apply to either Programme or Partner country scholarship according to their eligibility as Partner country student or Programme country student described in section 3.3.

Applicants can compete for one of such Erasmus Mundus scholarships if they are not EMJMD scholarship or former Erasmus Mundus master/doctoral course scholarship holders.

No more than three candidates for a single country can receive an Erasmus Mundus scholarship.

5. ERASMUS MUNDUS SCHOLARSHIP AMOUNT

The amount of a scholarship per academic year varies according applicant's residence and type as in the following

	PrC	PaC near (<4000Km)	PaC far (>4000Km)
Participation cost	EUR 4250	EUR 6000	EUR 6000
Travel cost	EUR 1000	EUR 2000	EUR 3000
Installation cost	-	EUR 1000	EUR 1000
Monthly allowance (12 months)	EUR 12000	EUR 12000	EUR 12000
Total per year	**EUR 17250**	**EUR 21000**	**EUR 22000**

<u>How to read the table:</u> the three columns indicate the different types of applicant as described below; the rows indicate the breakdown of the scholarship amount.

PrC: Scholarship holder **resident** in a Programme Country (including students with nationality of a Partner country)

PaC near: Scholarship holder **resident** in a Partner Country whose location is situated at less than 4.000 km from **Bolzano, Italy**

PaC far: Scholarship holder **resident** a Partner Country whose location is situated at 4.000 km or more from **Bolzano, Italy**

Residence distance is calculated via the distance calculator http://ec.europa.eu/programmes/erasmus-plus/tools/distance_en.htm

The Erasmus Mundus scholarship covers the payment of the EMSE participation costs and provides an annual travel and installation support plus a monthly allowance for 12 months a year.

Travel costs and installation costs are defined only on the residence of a scholarship holder at the application deadline. Participation costs are defined as in section 3.

The amounts of travel and installation costs reflect the maximum amount the Erasmus Mundus programme could grant to scholarship holders resident in a Partner Country or in a Programme country.

Installation cost is offered only to students who are resident in a Partner Country. It is given only once at the first academic year for the whole duration of the scholarship.

Travel amount per year	
EUR 1000	Scholarship holder **resident** in a Programme Country for travel costs
EUR 2000	Scholarship holder **resident** in a Partner Country whose location is situated at less than 4.000 km from **Bolzano, Italy (PaC near)**
EUR 3000	Scholarship holder **resident** in a Partner Country whose location is situated at 4.000 km or more from **Bolzano, Italy (PaC far)**
Installation amount for the whole two-years duration	
EUR 1000	Scholarship holder **resident** in a Partner Country whose location is situated at less than 4.000 km from **Bolzano, Italy (PaC near)**
EUR 1000	Scholarship holder **resident** in a Partner Country whose location is situated at 4.000 km or more from **Bolzano, Italy (PaC far)**

Monthly allowance will not be given to

- Scholarship holders for periods spent in their country of residence
- Scholarship holders form a Partner country for the period exceeding three months spent in any Partner country.

6. AWARDING PROCEDURE

A Joint Board consisting of academic/administrative representatives of all universities will review the candidacies.
Applicants that fulfil the admission criteria will be ranked according to the selection criteria. A preliminary ranking list and a reserve list will be defined accordingly.

The Joint Board will interview applicants in the preliminary ranking list. Applicants of the preliminary reserve list can be interviewed upon decision of the Joint Board.

After the interviews, a final ranking list and reserve list are formed. Applicants in the **final ranking list** will be awarded an Erasmus Mundus scholarship according to the availability in each mobility track (see section 6) and the order of the ranking list. If no scholarship for the mobility track chosen by an applicant of the ranking list is available, the applicant will be offered a scholarship for a different mobility track. In case of applicant's refusal or no answer by the confirmation deadline, the first applicant of the finalised reserve list will be offered the scholarship. The selection will continue iteratively until all scholarships have been allocated.

Applicants in the reserve list will be awarded an Erasmus Mundus scholarship only in case of refusal of applicants in the ranking list.

Applicants of the ranking list must communicate the acceptance and participation to the programme by the date specified in section 8. Applicants in the reserve list will be notified of available scholarships and confirm their acceptance and participation to the programme as specified in Section 8.

Applicants that fulfil the admission requirements but do not belong to the ranking and reserve list are not awarded an Erasmus Mundus scholarship and can participate to the EMSE programme as self-paying

7. HOW TO APPLY

Applicants apply on-line at the EMSE website https://emse.inf.unibz.it/submissions/index.php

Applicants are requested to fill out the on-line application and provide the following documents in electronic form:

- A copy/photocopy of English proficiency certificate.
- Curriculum Vitae (European format)
- Proof of nationality (copy of passport). Only pages with a photo and personal data.
- Proof of place of residence (e.g., residence certificate)
- Certified (translated in English) copy of university diploma
- Certified (translated in English) copy of transcript of study results (subjects taken during their degrees, along with the marks obtained and the number of hours/credits devoted to each subject)
- Motivation letter
- Recommendation letters and references

Additional documents may be requested. Unreadable or incomplete documents or late submissions will not be considered.

Applicants admitted to the EMSE programme **will be interviewed** as described in section 6.

In the application, applicants must specify the mobility track. Students selected for one type of track cannot later change the two universities of destination. Applicants cannot apply to more than one type of grant or mobility track.

THE EMSE CONSORTIUM WELCOMES STUDENTS WITH THEIR OWN SOURCES OF FUNDING.

8. HOW TO ENROL

Admitted students will be contacted by the EMSE secretariat and guided in the enrolment procedure.

To secure the participation, admitted students **must pay the tuition fee first instalment by the confirmation date (see section 9)**:

-   €600 for Partner country applicants and
-   €425 for Programme country applicants.

Scholarship holders will be reimbursed of such payment with the first monthly allowance.

9. IMPORTANT DATES

-   **December 1st:** submission opening date

-   **March 3rd:** submission closing date

-   **March 16-17th**: interviews with applicants of the ranking list

-   **March 18th:** notification of admission and scholarships award to applicants

-   **March 31st:** confirmation of participation to the EMSE programme and acceptance of the scholarship from applicants awarded Erasmus Mundus Scholarship by **sending an email and the receipt of the tuition fee first instalment**

-   **12th April:** confirmation of participation to the EMSE programme and (eventually) acceptance of the scholarship form applicants of Reserve list and confirmation of participation to the EMSE programme form all other admitted applicants by **sending an email and the receipt of the tuition fee first instalment**

10. CONTACTS

EMSE secretariat

Free University of Bozen-Bolzano

Faculty of Computer Science

Dominikanerstrasse, 3, P.za Domenicani

39100 Bozen-Bolzano (BZ) - Italy

E-mail: **emse-secretariat@unibz.it**

Web Site: http://em-se.eu

Fax: +39 0471 016009