



**The Erasmus Mundus Joint Master Degree Programme in
Big Data Management and Analytics (BDMA)**

Application Manual V 2.3

January 2020

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1 Presentation & Structure

The Big Data Management and Analytics (BDMA) programme favours the integration of students into a network of specialists and researchers in BI and BD. The curriculum is jointly delivered by Université Libre de Bruxelles (ULB) in Belgium, Universitat Politècnica de Catalunya (UPC) in Spain, Technische Universität Berlin (TUB) in Germany, Technische Universiteit Eindhoven (TU/e) in the Netherlands and CentraleSupélec (CS) in France. Scholars from academic partners around the world and partners from leading industries in BI, private R&D companies, service companies, public research institutes, and public authorities will contribute to the program by training students, providing computers, software, course material, job placement or internship perspectives, as well as financial support. This consortium will prepare the students not only to answer today’s professional challenges by a strong connection with the needs coming from the industry, but also to pursue their studies into doctorate programs, through strong connections with the researchers’ and innovators’ views.

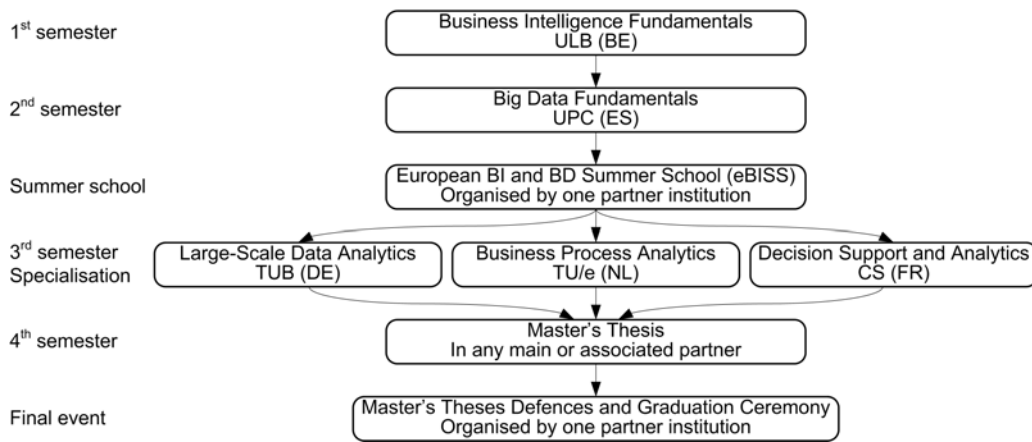


Figure 1: Program structure and student’s mobility

BDMA is a 2-year (4 semesters, 120 ECTS) program. The first year is devoted to fundamentals: the first semester at ULB, the second one at UPC. Then, all students participate to the European Business Intelligence Summer School. In the third semester, the program offers three specializations: Large-Scale Data Analytics, Business Process Analytics, and Content and Usage Analytics at TUB, TU/e, and CS, respectively, and students move to the partner of the chosen specialization. The fourth semester is dedicated to the master’s thesis and can be realized at either as a placement in industry, or as an internship in a research laboratory in any full or associated partner. The detailed program structure and the mobility of the students are presented in Figure 1. Eventually, all students will be gathered in the workshop “Business Intelligence: Innovation Meets Research”. The tuition language is English. The program targets students with a Bachelor of Science (or a level equivalent to at least 180 ECTS) with major in Computer Science, as well as an English proficiency corresponding to level B2 of the Common European Framework of Reference for Languages. Upon completion of the program, graduates will be awarded with a multiple degree, the national master’s degrees from ULB, UPC and the university of the specialization.

2 Eligible applicants

- Students from all countries can apply to the BDMA Master Programme.
- Students must have been awarded a Bachelor's degree (i.e., the equivalent of minimum 180 ECTS), from an accredited university (listed in the [IAU's List of Universities of the World](#) or in some of three top university rankings [Shanghai](#), [QS](#) and [Times](#)).
- In the case your university is not in the drop-down list of the application form, you should send proof of quality about your university to bdma_admissions@cs.ulb.ac.be). Such quality proofs might be: educational agreements with universities in the consortium, external rankings (not elaborated by the university and of undoubtedly reliability), etc. The consortium will evaluate each case and communicate as soon as possible if the university is accepted in the list. Without such positive from the consortium, students whose university is not in the list are not eligible to apply.
- In the case that the applicant has not yet obtained his/her bachelor degree at the time of application deadline, he/she may nevertheless apply to the program. In this case, if he/she is accepted, the acceptance will be conditional. As rule of thumb, non-finished applicants must accredit the final degree according to the dates specified on the [web page](#). Also, check the instructions how to fill the Excel file in Section 6.1.
- Students applying for a scholarship must upload proof of obtained bachelor degree no later than the dates specified on the [web page](#). In the case you are not able to obtain the degree before the specified deadline, you should contact the admission center (at bdma_admissions@cs.ulb.ac.be) for further assistance. Notice that the possible extension of this deadline depends on your country of origin and the period needed for obtaining the visa for the destination country.
- Non-native English Students must be able to demonstrate proficiency in English by means of an internationally recognized test (see Section 6.1.5 - Table 1) equivalent to level B2 in the CEFR (Common European Framework of Reference for Languages) or with the proof that they have followed at least one of the previous level(s) of studies in English.
- Be aware that you can apply to more than one Erasmus Mundus scholarships, but **no more than three**. If you apply to more than three Erasmus Mundus scholarships you will be automatically excluded from all of them.
- The Erasmus+ program distinguishes students who are nationals or residents of Programme countries and Partner countries.
 - **Programme countries** students are:
 - * Students who are nationals of one of the 28 EU Member States: Germany, Austria, Belgium, Denmark, Spain, Finland, France, Greece, Ireland, Slovakia, Slovenia, Italy, Luxembourg, the Netherlands, Portugal, UK, Sweden, Bulgaria, Malta, Poland, Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Romania, and Croatia.
 - * Students who are nationals or residents of one of the following countries: Iceland, Liechtenstein, Norway, Turkey, Former Yugoslav Republic of Macedonia (FYRoM) and Serbia.
 - * Students who have resided or carried out their main activities (studies, work, etc.) for more than 12 months over the past five years (counted backward starting from the end of February following the official deadline for application to the master) in any of the above countries. For applicants applying for student intake in 2020, this is the period from December 16, 2014 to December 15, 2019.
 - Students of **Partner Countries** are all other students.

Note:

- Students who have already obtained an Erasmus+ scholarship, an Erasmus+ Master Course scholarship, or an Erasmus Mundus Joint Doctorate scholarship are not eligible to apply for an additional scholarship under the Erasmus+ action.
- Students benefiting from an Erasmus+ scholarship cannot benefit from another EU grant while pursuing their studies under an Erasmus+ scholarship.
- Application for either of the two previous categories does not require paying of any application fee. The only possible cost is that of the paper document submission, and can vary from the chosen mailing service.
- The program cannot be studied from distance or part time thus all the accepted students must be present at the institution where they are enrolled at the moment.

Background

Note: we receive several questions about the expected application profile. Note that the BDMA course has a strong component on computer science and the following pre-requisites are expected:

- Course on relational databases, including SQL, relational algebra and database optimization,
- Course on algorithms and data structures,
- Probability and statistics,
- Experience with modelling languages such as UML and ER diagrams,
- Graph theory (notions such as graphs, reachability, transitivity, ...),
- Set theory (Notions such as set, set operations, sequence, multiset, function) and logics (mathematical notation and argumentation; basic proofs),
- Programming skills: variables, control structures such as loops and if-then-else, procedures, object-oriented notions such as classes and objects, etc.

The BDMA consortium does not evaluate applications before the evaluation period at the end of the application time. If you hesitate whether your profile meets the expected requirements, please, check basic literature on the concepts listed above to double check if you meet them. We do accept non-computer science profiles into the master provided they have experience in these matters or long working experience in related areas. However, it is the student's responsibility to assess if he / she meets the requirements.

3 Application periods

Please take into account that there are three different application periods considering different types of you application (scholarship/fee paying) and your nationality (EU/non-EU students):

1. All candidates (EU or non-EU) applying for the scholarship (Programme and Partner countries students - see Section 2).
2. Non-EU candidates applying as fee paying students.
3. EU candidates applying as fee paying students.

Note: *The deadlines/important dates for all three application periods are available at the program's [web page](#).*

4 Application checklist

To guarantee that your application is complete and acceptable, please use the following checklist to ensure that the most important steps of the application process are completed.

(* - mandatory steps)

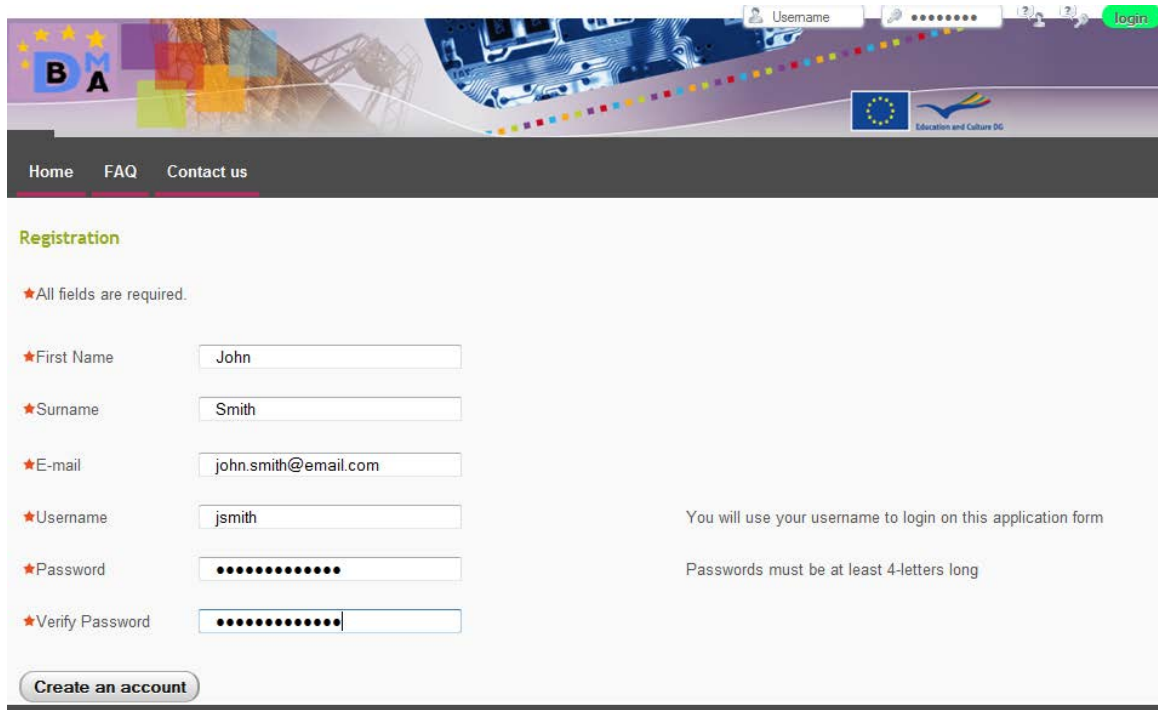
1. **Register to the online application system*** - Section [5](#)
2. **Fill in the online application form*** - Section [6.1](#)
 - (a) Personal details* - Section [6.1.1](#)
 - (b) Information about your academic qualification* - Section [6.1.2](#)
 - (c) Information about your references - Section [6.1.3](#)
 - (d) Information about your work experience - Section [6.1.4](#)
 - (e) Information about language skills* - Section [6.1.5](#)
3. **Upload your documents to the online application*** - Section [6.2](#)
 - (a) Mandatory documents* - Section [6.2.1](#)
 - (b) Optional documents - Section [6.2.2](#)
4. **Submit your online application form*** - Section [6.3](#)
5. **Submit your paper documents¹** - Section [6.4](#)

¹Paper documents must be sent only in the case you are accepted into the program. You will be timely notified about this (check the timetable [here](#)).

5 Registering to the System

Prior the beginning of the application procedure, you first need to register to the BDMA online application portal using your **internet browser**².

- Link to the application portal: <http://cs.ulb.ac.be/emundus>



The image shows a web browser window displaying the BDMA registration form. The browser's address bar shows the URL <http://cs.ulb.ac.be/emundus>. The page header includes the BDMA logo, a navigation menu with 'Home', 'FAQ', and 'Contact us', and a login section with 'Username', a password field, and a 'login' button. The main content area is titled 'Registration' and contains a form with the following fields: 'First Name' (filled with 'John'), 'Surname' (filled with 'Smith'), 'E-mail' (filled with 'john.smith@email.com'), 'Username' (filled with 'jsmith'), 'Password' (filled with 10 dots), and 'Verify Password' (filled with 10 dots). A 'Create an account' button is located at the bottom of the form. To the right of the form, there are two lines of text: 'You will use your username to login on this application form' and 'Passwords must be at least 4-letters long'. The page also features the European Union flag and the 'Education and Culture DG' logo in the top right corner.

Figure 2: BDMA Registration Form

All fields are required in the registration form and they should be filled as follows:

- **First Name:** First (Given) name of the candidate
- **Surname:** Last (Family) name of the candidate
- **E-mail:** E-mail of the candidate
- **Username:** Username for logging in the system
- **Password:** Password for logging in the system (at least 4-characters long)

After submitting the form for registration, you will receive an e-mail containing your personal data, along with the necessary login information and link for the confirmation of your e-mail address.

²Please use Mozilla Firefox or Google Chrome browsers for the full functionality of the application web page.

Your user id : 2192
 Your name : John Smith
 Your email : john.smith@email.com
 Your username : jsmith
 Your password : bdmatest

Dear John Smith,

Thank you for your interest in the BDMA master's course. We have received your request to submit an application to our programme and we will process it as soon as you confirm your email address by clicking on the following hyperlink: <http://www.info.univ-tours.fr/.../>

Once your email address is confirmed you may proceed to complete your application.

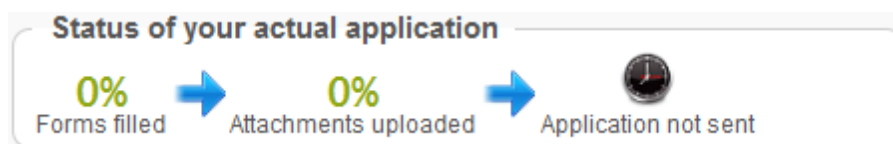
You will be notified by email of the progress of your application.
 Kind Regards,
 BDMA selection committee

Figure 3: E-mail address confirmation

6 Application procedure

Application for the BDMA Erasmus Mundus program consists of the following four **mandatory** steps:

1. *Filling in Application Form*
2. *Uploading Attachments*
3. *Submitting Application Form*
4. *Submitting Paper Documents*



Please keep in mind that early online submissions will be first checked and in case of needed amendments (e.g., missing mandatory files to upload or incorrect Excel file) you would be notified in time as to amend your submission before the deadline.

6.1 Filling in Application Form

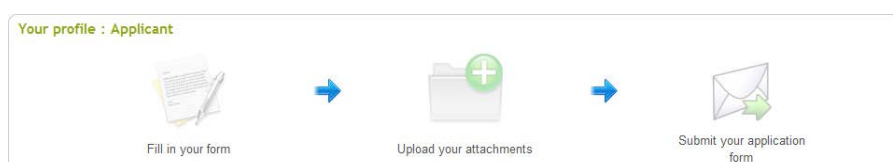


Figure 4: Status of the application prior the beginning of the application procedure

The application procedure starts by filling in the online application form. The form consists of the following sections (forms). After filling each form, you need to confirm it by pressing "Save & Continue" button.

Personal Details

Sex ★
 Male Female

Birth date ⓘ ★

Nationality ★

Contact address ★

Mobile phone number ⓘ ★

6.1.1 Personal details

This form consists of personal details information (Sex, Birth date, Nationality, Contact address, Mobile phone number). All fields are **mandatory**.

Note: *Please include full prefix with the country code for the mobile phone number.*

Along with that, the form also requires you to prioritize your preferences for specialties (Specialty 1, Specialty 2 and Specialty 3) ranking them from your first to third choice. Nevertheless, this is only for statistical purposes and will not affect the admission procedure. The final assignment to the specialties will be done during the first year, based on your preferences, your marks and the availability at each of the three universities (i.e., CS, TUB, TU/e).

Specialty1 ★

Specialty2 ★

Specialty3 ★

Candidates with any kind of disability or need can shortly (absolutely confidentially) describe it, only for the purpose of positive discrimination during the evaluation procedure.

Do you have physical disability or special needs? ★
 Yes No

Please specify ★

During the application period for the Erasmus Mundus scholarships, candidates are at the end asked to define to which category of scholarship they apply (see Sections 2 and 3). In case of doubt please contact us. Failing to choose the proper category may imply automatic exclusion.

Scholarship category ★

Partner country Programme country

Justification for programme country ★

How did you hear about BDMA? ★

Save & Continue

During the application period for the self-funded students, candidates are alternatively asked to provide information about the funding they plan to use. If a candidate plans to use an external scholarship for studying the BDMA programme, then further information about the scholarship must be provided (at least the funding organization and the application deadline for a scholarship).

Will you benefit from an external (i.e. non-Erasmus-Mundus) scholarship grant? ★

No Yes

Explanation for external grant ? ★

Save & Continue

6.1.2 Academic qualifications

To continue with the application procedure you need to provide the information about your **main bachelor degree**. Degrees with a major in Computer science are preferred. However, other degrees will be also acceptable. In that case, please provide as much information as possible about your working experience (Section 6.1.4) in the domain of BI or Computer Science in general in order to counterbalance the fact that you do not have a major in Computer Science. That will possibly increase your overall ranking.

First, you need to provide academic information about the title, the institution and the date when the degree is obtained.

- The **Name** of the title,
- **Web page containing the curriculum of the studies**,
- **Country** and
- **University** where the title has been obtained. If you pursued your studies in a **delocalized campus** (i.e., an international campus abroad from your home university) check the delocalized campus option.
- **Date of graduation** when the title was obtained (this refers to **your** graduation date). This is only required for your main title.

★ **Mandatory fields**

Main Bachelor

Name ★

Web page containing the curriculum of the studies ★

Country

University ★

Delocalized campus
 No Yes

Is it a private institution ?
 No Yes

Date of graduation ★

Please note that to be able to apply for BDMA, the institution where you obtained your title needs to be in the list of recognized universities by the International Association of Universities (IAU), and thus it needs to exist in the drop-down list of the application form.

In addition, in the case you stated that the title has been issued from a private institution, you need to provide additional documents, issued by the local government clearly stating that the program studied, and the title obtained is officially recognized (see Section 6.2.1).

The **web page containing the curriculum of the studies** is the web page of your school showing the details about the courses being part of your degree. In case your university does not have such web page you can alternatively upload the scanned or digital version of this curriculum together with your transcripts and clearly explain this in your cover letter.

Besides filling in the above form, you are also **required** to download a copy of the following Microsoft Excel spreadsheet for self-evaluation and fill it in with the courses that you took in your bachelor program. Later you **must** upload the filled in spreadsheet as “*Self-evaluation sheet for the main bachelor*” in Mandatory attachments (see Section 6.2.1).

Note: *The self-evaluation excel spreadsheet contains macro commands to support the introduction of different types of grading systems (numerical/textual) and thus to properly calculate the mark the macro functionalities **must** be enabled in Microsoft Excel.*

Please read the instructions provided in the first sheet of the self-evaluation excel file.

Failing to properly fill in this spreadsheet, unprotecting the cells or changing the formulas inside the spreadsheet will result in automatic exclusion of the applicant from the selection process.

Download here the mandatory template of the self-evaluation spreadsheet!

You can also download the examples of already filled in self-evaluation spreadsheets for the cases of [bachelor with numerical marks](#), [bachelor with textual marks](#), and [master with](#)

numerical marks³

First Name:		John	Last Name(s):		Doe
Nationality:		Serbian	Passport number:		9999999999999999
Evaluating title:		Bachelor in Software Engineering	Obtaining date (dd/mm/yyyy):		10/10/2010
University:		University of Belgrade	Country:		Serbia

Minimum local credits to graduate:	240	Official number of years to study:	4
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Type of the marks:	Minimum passing mark:	6
Numerical mark (e.g., 1 - 10)	Maximum passing mark:	10

Type of the marks:	Mark equivalence 1				
Textual mark (e.g., F - A)	Mark equivalence 2				
Numerical mark (e.g., 1-10)	Mark equivalence 3				
Textual mark (e.g., F - A)	Mark equivalence 4				

TOTAL	
ECTS	240
Mark (1 - 4)	2.554166667
ECTS ACM Major	149
ECTS ACM Minor	12
ECTS CS Subject	161
Local credits total	240

SELF-EVALUATION FORM							
	Course	Original credits	ECTS conversion	Original Numerical Mark	Original Textual Mark	Mark (1 - 4)	
1	information technology 1	8	8	6		1	Comp Systems Engineering
2	introduction to business	3	3	7		1	Legal / Professional / Ethics / Society
3	college english 1	1	1	8		2	Interpersonal communication
4	management information systems	7	7	8		2	Management of Info Systems Org.

Figure 5: Self-evaluation of student's average mark - first spreadsheet (example)

In the spreadsheet shown in Figure 5 you are first required to provide your personal data and academic data for the evaluated title:

- First name (First name from registration form)
- Last name(s) (Surname(s) from registration form)
- Nationality
- Passport number
- Evaluating title (Your main bachelor degree title that is evaluated in this spreadsheet)
- Obtaining date, i.e., the date when you obtained your evaluating title (**expected date if not obtained yet**)
- The university at which you obtained this title
- The country where you obtained this title

In the second part of the spreadsheet, due to heterogeneity of the titles, you are asked to provide the following information about the grading system of the evaluating title so the title can be equalized both considering the grades and the credits obtained to a common system used for evaluation⁴:

- Number of local credits to graduate. If this does not appear in the transcripts, just fill it with the sum of all local credits you took
- Expected total number of years in the degree to obtain the title (i.e., to graduate). Importantly, it **does not refer** to the number of years it took you to graduate but to the number of academic years

³Use these examples only for a reference, and always use the above template for filling in your self-evaluation file from scratch.

⁴Student's passing marks are equalized to the marks inside the 1-4 interval, where 1 stands for the fair (lowest passing mark) and 4 stands for the outstanding (highest mark). Local credits student obtained are equalized to the corresponding number of ECTS credits.

- Type of the marks each course is graded with
 - **Numerical mark based on ascending intervals** (e.g., 1-10, 50-100, 1-30, 10-20 etc.). For numerical marks you are additionally required to provide the *minimum* mark for **passing** the course and the *maximum* mark that can be obtained.
 - **Textual mark** (e.g., A-F, Excellent - Passing). For textual marks or numerical marks that are based on the set of enumerated values (i.e., not intervals) or descending values (e.g., 1 being highest - 4 being lowest), you are additionally required to provide the distribution of your local marks into four different intervals (1 - 4), where 1 stands for the fair (lowest passing mark) and 4 stands for the outstanding (highest mark). Only the **passing** marks must be considered. The distribution of the marks depends on the number of marks and needs to follow the following rule: “*Each interval must contain less or equal number of marks that the adjacent lower one.*”

After you provided the data about the local grading system of your title, you should fill the main part of the spreadsheet with the courses taken within the evaluated title. **The courses need to be introduced in the spreadsheet in the same order as they appear in the transcript you provide.** The following data about each taken course is needed:

- Course name
- Number of the original credits (in the local grading system). If all courses have the same weight (or the number of credits does not appear in the transcripts), just write “1” in all these cells.
- If the marks are of numerical type the *original numerical mark* is required. Otherwise, the *original textual mark* is required.
- The computer science subject that the course covers according to [The Glossary of Computer Science courses](#) (candidates may only choose one subject, either *ACM major* or *ACM minor* per course). Only the maximum of 10% out of all computer science subjects can be assigned to ACM minor subjects. If your title carries more than 10% of ACM minor out of all computer science subjects please leave both ACM minor and ACM major fields empty for those exceeding the maximum percentage allowed.

Important notes (please, double check, this is a list of typical mistakes made when filling the Excel template):

- You **must** use the same grading system as in the provided transcripts. In the case that both numerical and textual marks are available, you must mandatorily choose the numerical ones.
For courses graded with pass/fail type of mark, you should only provide the credits that the course carries and not the mark obtained.
- You must provide information about the Computer Science subject that the courses covers, for as many courses as possible, i.e., choose ACM Minor or ACM Major. Importantly, do not leave these two columns completely empty, as this will prevent you from continuing your application procedure.
- Each cell/text colored in **red** means that a mistake was made. In that case, please, check that the entered data is in accordance with the explanations above.
- In case that your bachelor studies are separated in a 2-years high diploma and a 2-years bachelor, you should consider both degrees for the calculation of credits and marks, and later provide all corresponding certificates and official transcripts. In this case, the data about the evaluated title (name, date, university...) should come from the second degree.
- The total ECTS should be greater than or equal to 180 ECTS.
- If you have not obtained your bachelor diploma yet, please follow these instructions when filling in the self-evaluation sheet:

- If a course is being taken but not yet finished it should be added to the sheet (but leave the mark fields empty),
- If a course is neither being taken nor enrolled yet, it should not be added to the self-evaluation sheet. This may cause the field “Local credits total” to become red, indicating that not all the local credits have been inserted. In such case you can ignore this error.
- *If you have a block of transferred credits in your transcripts, try to assign it to an ACM major or minor whenever possible.*
- *In case the local textual marks of your university consists of less than 4 passing marks (e.g., A,B; A,B,C) distribute the marks in the self-evaluation sheet in the following way (Notice that such distribution is a fair middle solution for equalizing your marks to the common evaluation range, that avoids creating outliers as well as leaving candidates out of the selection.):*
 - *The case of 3 passing marks (A, B, C): 1-C; 2-; 3-B; 4-A*
 - *The case of 2 passing marks (A, B): 1-C; 2-; 3-; 4-A*
- *In case your university uses different mark ranges for different courses you should follow these instructions to scale your marks up to the same level:*
 - *You need to homogenize your marks to the common scale (i.e., 50-100, 50 being the minimum passing and 100 the maximum passing mark), before entering them to the self-evaluation sheet.*
 - *If you have a local grading system [a,b], 'a' being minimum passing and 'b' maximum passing mark, and you want to scale mark X to a common system [50,100] then you need to use this formula:*

$$\frac{100-50}{b-a} \times (x - a) + 50$$

- *(**x - a**) translates the mark in local system - i.e., calculates the distance from the minimum, the fraction is a scaling factor so you scale the mark with it and translates it back in the new system with + 50*
- *This formula should be applied to all your marks each time replacing a and b with the ranges the mark is inside and x with an actual mark. (e.g, [a = 30, b = 75])*
- *You should explain this case carefully in your cover letter so it would be clear to the selection committee.*

Once you enter all courses from your main bachelor/ main master degree in the spreadsheet you will automatically obtain the corresponding calculated values (Figure 5):

- *ECTS*, i.e., the total number of ECTS credits,
- *ECTS CS Subject*, i.e., the number of ECTS credits in Computer Science, and
- *Mark (1-4)*, i.e., weighted average mark rounded to two decimal places.

Note: *Further details of calculations for the evaluating title are given in Appendix A*

The filled in spreadsheet file(s) **must** be then uploaded as a Mandatory attachment (“*Detail of the calculation for the main bachelor*”). Furthermore, you also need to upload your “*Bachelor certificate*” as well as “*Official transcripts*” (showing the list of courses, with the assigned weight and mark) corresponding to the degree. More information on this, in Section 6.2.

Besides the main bachelor, you can repeat this process for other bachelors/masters you have or any relevant course you took. In those cases the same calculation of the weighted mark is needed as for the main bachelor. You can enter 0 or more additional degrees. To enter more than 1, use the plus button (minus button to remove it).

Other courses that are relevant for this application/evaluation procedure can be entered. Besides the main information about the course (Name, Curriculum of the course, Institution,

Other Bachelors/Masters

Name ★

Web page containing the curriculum of the studies ★

Country ★

University ★

Delocalized campus
 No Yes

Duration) you are asked to provide the area to which the course belongs (Computer Science, Business Administration or Other).

Other Courses Taken

Name ★

Web page containing the curriculum of the studies ★

Institution ★

Area ★

Area ★

- Please select
- Computer Science
- Business
- Other

Duration (Hours) ★

Save & Continue

6.1.3 References

In this form you are expected to provide information about the persons you have asked to write a letter of recommendation for you. You can provide between 0 and 3 reference letters, hence the references are not mandatory for your application. Academic reference letters (from university professors) are preferred but you may as well provide reference letters from other relevant persons (e.g., your employers). In that case, if the referee is not from academic world

or his/her H-factor is zero, you do not need to provide the source from where you calculated the H-factor of your referee (e.g., Google Scholar). See example below.

First, contact a referee who knows you (e.g., the professor that lectured you in some course), and ask him/her whether he/she is willing to provide the recommendation for you.

The image shows a web form titled "First Reference" with the following fields and values:

- Name:** xxxxxxxx xxxxxxxxxxxx
- Homepage:** http://www.referee_site.com
- H-factor:** 9
- Microsoft Academic Search web page:** http://academic.research.microsoft.com/xxxx
- Position:** Professor
- Email:** xxxxx@xxx.xxx
- Telephone number:** xxxxxxxxxxxxxxxx
- Contact Address:** xxxxxxxxxxxxxxxxxxxxxxxx
- Country:** Please select

For each referee introduce the data in the corresponding form. Indicate the *full name*, the *homepage*, optionally the *H-factor* (see below), the *position occupied*, the *country*, the single correct *email address* of the referee, the *telephone number* and the *postal address*. In case your referee does not maintain his/her homepage you should provide any relevant web page containing professional information about him/her. For example his/her profile on [DBLP](#) or [LinkedIn](#).

Please double check the above information (especially the referee's email address) to avoid delay in notifying your referee and obtaining your letter of recommendation.

Optionally, for each referee, you can provide his/her H-index (H-factor)⁵. You can use various web sites and tools in order to calculate the H-index (e.g., web sites: Google Scholar, tools: Publish or Perish). We show here how to compute the H-index of your referee using [Google Scholar](#). Simply, write the name of the referee in the text box and choose the right one

⁵ "The h-index is an index that attempts to measure both the productivity and impact of the published work of a scientist or scholar." - [Wikipedia](#)

among those proposed, if more than one (see Figure 6). In case you find your referee's H-index using any available web site, you should additionally insert the link to the web page dedicated to your referee on that web site (or tool). Otherwise, in case you do not provide your referee's H-index or it is zero (0) no additional information is required.

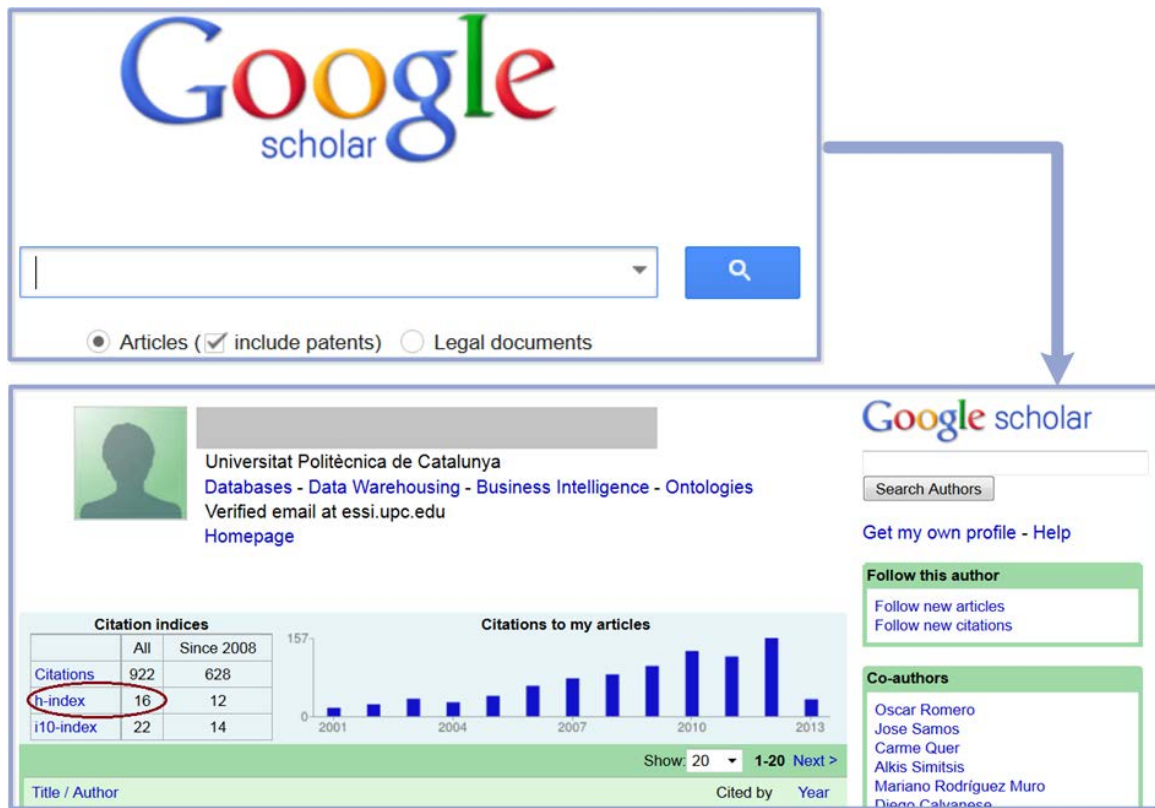


Figure 6: Calculation of the H-index for the referees

The referee you have chosen will get an automatic e-mail asking him/her to fill a brief report (4-5 questions) about you. The referees are then supposed to upload the corresponding reference file into the system until the deadline specified in the [web page](#).

You will be able to see whether your referees have submitted their letters by getting an e-mail stating that the report has been uploaded.

Importantly, notice that your online application submission is independent from the submission of the letter of reference by your referee. This means that your letter of reference can be submitted after you submit the online application, but within the corresponding deadline.

Please bear in mind that it is your responsibility to make sure that the referees you have chosen upload their letters before the corresponding deadline. Only references associated with an uploaded letter will be taken into account by the selection committee when evaluating your application. Additionally, we may contact your referees for clarification or further information about you.

In the case that for some reason (e.g., incorrect e-mail provided) you prefer to change or delete some of the referees or your referee(s) encountered a problem during the process, just delete that referee and introduce new information again. Each time that referee information is added an automatic e-mail will be sent to him/her.

6.1.4 Work experience

In this form you should enter your professional experiences that are the most relevant to BDMA. You can enter 0 or more work experiences. If you do not want to enter any work experience,

use the minus button before saving the form. To enter more than 1 work experience, use the plus button.

The image shows a web form titled "Professional experience". It contains several input fields and a file upload section. At the top right of the form area, there are green plus and red minus buttons. The fields are as follows:

- Organisation** (required): Text input with "ITCompany".
- Country** (required): Dropdown menu with "Spain".
- Homepage** (required): Text input with "http://www.itcompany.es".
- Position** (required): Text input with "Junior Developer".
- Area** (required): Dropdown menu with "Business Intelligence".
- Placement/Internship** (required): Radio buttons for "Yes" and "No", with "No" selected.
- Start date** (required): Date input with "12/06/2012" and a calendar icon.
- Duration (Years)** (required): Text input with "2".
- Proof document of work experience** (required): File upload button labeled "Choose File" with the filename "contract.pdf".

At the bottom of the form is a "Save & Continue" button.

For each work experience, indicate the *name* and *homepage* of the company, the *position* you occupied, if this work experience was done in the context of either an *internship* or *placement*⁶ (by selecting 'yes'), the *duration* in years, and upload the document in PDF that proves your work experience. This should typically be your *contract*, i.e., the legal document that states and explains a formal agreement of your employment, in English. For long contracts only the relevant parts need to be translated, like dates (i.e., duration), tasks, category etc. Alternatively, you can provide another official document stating your work experience and information above (e.g., internship certificate, proof of salary). Besides this main information about the employment you are also asked to provide the *Area* to which your job belonged (Business Intelligence, Computer Science, Business Administration or Other).

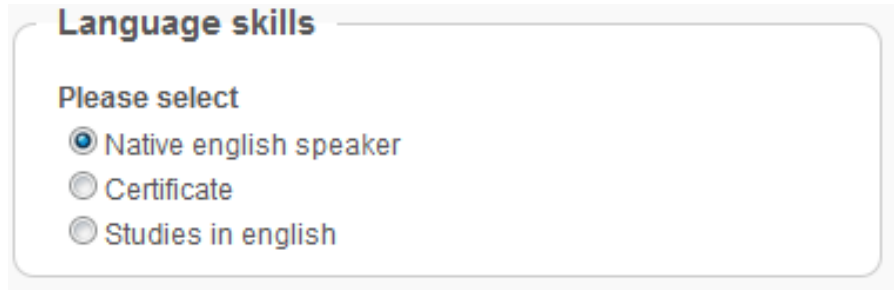
Please note that in the case of self-employment i.e., you have/had your own business you need to provide corresponding documentation (e.g., certificate of Incorporation, certificate to Commence Business, company Code etc.) to prove that and you should further clearly explain this situation in your cover letter.

⁶A placement or an internship is a usually short time training period spent to acquire a working experience. Usually the term placement is used for a training period in a company, whereas an internship may refer to a training period spent in the academic world, like for instance in a research laboratory.

6.1.5 Language skills

In the last application form, you are asked to provide the proof of your English proficiency. There are three possibilities to prove your English proficiency:

1. You are a native English speaker. You should upload a document (an official certificate or a sworn statement explaining your case) showing that you were born or grown up in an English speaking country (e.g., high school certificate).

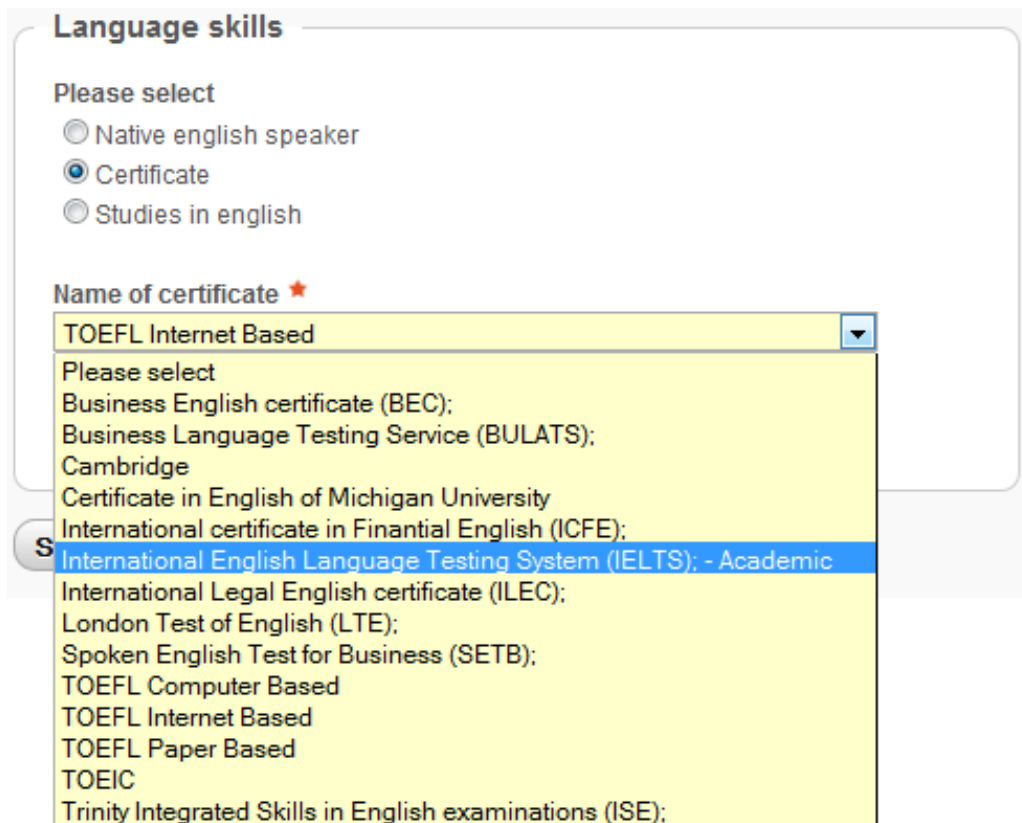


Language skills

Please select

- Native english speaker
- Certificate
- Studies in english

2. **Provide a certificate of an English test** stating a result equivalent at least to level B2 in the CEFR (Common European Framework of Reference for Languages). The following English certificates are acceptable with their corresponding minimum grades.



Language skills

Please select

- Native english speaker
- Certificate
- Studies in english

Name of certificate ★

TOEFL Internet Based

Please select

- Business English certificate (BEC);
- Business Language Testing Service (BULATS);
- Cambridge
- Certificate in English of Michigan University
- International certificate in Finantial English (ICFE);
- International English Language Testing System (IELTS); - Academic**
- International Legal English certificate (ILEC);
- London Test of English (LTE);
- Spoken English Test for Business (SETB);
- TOEFL Computer Based
- TOEFL Internet Based
- TOEFL Paper Based
- TOEIC
- Trinity Integrated Skills in English examinations (ISE);

Figure 7: Drop-down list of the acceptable English proficiency certificates in the online application form

Table 1: Acceptable English proficiency certificates

Acceptable certificates of English proficiency	
Certificate name	Minimum acceptable grade
Cambridge General English Exams	First Certificate (FCE)
Cambridge Business English certificate (BEC)	Vantage
Cambridge International certificate in Financial English (ICFE)	B2
Cambridge International Legal English certificate (ILEC)	B2
Business Language Testing Service (BULATS)	60
Cambridge International English Language Testing System (IELTS) - Academic	5.5
Spoken English Test for Business (SETB)	Communicator
London Test of English (LTE)	Level 3
Certificate in English of Michigan University (ECCE)	Competency (ECCE)
Test of English for International Communication (TOEIC) - Listening and Reading	785
British Council	APTIS B2
Pearson Test of English (PTE)	PTE General Level 3 PTE Academic 59 a 75
Pearson - London Chamber of Commerce and Industry (LCCI)	LCCI English for Business 3
The European Language Certificates (telc)	telc English B2
UNICert	UNICert II
CLES (Certificat de Compétences en Langues de l'Enseignement Supérieur)	CLES 2
University of Oxford	Oxford Test of English B2 111-140
LanguageCert International ESOL: Listening, Reading, Writing, Speaking	Communicator B2
Test of English as a Foreign Language (TOEFL) ⁷	
Internet Based	72
Computer Based	230
Paper Based	570

The period between the proficiency test results and this application should not exceed two years. If the test is more than two years old, then the applicants must show that they have been practicing English during the last two years (e.g., by providing a certificate of some courses taken in English during the last two years besides the certificate of the English test).

Please note that even though you are allowed to send the official paper form of your English test results after the online application deadline (see Section 3), you are required to provide at least the test score before the application deadline together with the screenshots of the online results.

⁷The ETS institution code of Université Libre de Bruxelles for automatic TOEFL results delivery is 0550.

Language skills

Please select

Native english speaker
 Certificate
 Studies in english

Name of certificate ★

International English Language Testing System (IELTS); - Academic ▼

Level ★

6.5 ▼

- The tuition of at least one of your bachelors or masters provided in “*Academic qualification*” was delivered in English (**Studies in English**). You should later upload a document (certificate) from your university stating that you followed this program in English.

Language skills

Please select

Native english speaker
 Certificate
 Studies in english

Select your studies ★

Software engineering ▼

Save & Continue

Note: Having an internationally recognized English certificate (e.g., TOEFL, Cambridge, etc. see Table 1) is preferred to graduating from studies delivered in English.

The documents that prove your English proficiency must be uploaded in the “*Mandatory attachments*” part (“*A certificate or proof of English proficiency*”). More information on this, in Section 6.2.

After you enter the language skills information the first phase of the application process (Filling in Application Form) is completed.

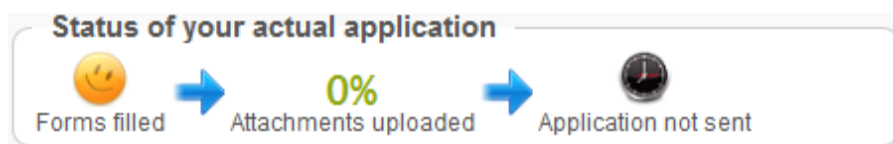


Figure 8: Status of the application after the online application forms are filled

6.2 Uploading Attachments

To continue with the application process you are required to upload necessary documents into the application web page (**✗ mandatory attachments**). You are also welcomed to upload additional documents (**✗ optional attachments**) clarifying any possibly vague situation relevant for the application process.

All documents to upload must not exceed 2M bytes.

Each attached document (containing text) must be translated in English and the translation must be officially certified (e.g., by a sworn translator).

6.2.1 Mandatory Attachments

The documents that you are required to upload are the following:

- **Photo**
A recent personal photo, in passport size, only in **jpg, jpeg, png** or **gif** formats only.
- **Cover letter**
A letter in English motivating your interest and application for BDMA. Carefully explain your competitive background and your professional perspectives, and how BDMA will help you in achieving them and hence, the reasons why you should be elected and granted in front of others. Also, use the cover letter to clarify any possible ambiguity in your application procedure. **PDF** format only.
- **Passport**
A scanned copy of your valid passport showing your personal information (name, birth date, birth place, validity period, sex, signature and passport number), in **PDF** format only.
- **CV**
Your personal comprehensive Curriculum Vitae, in English, in **PDF** format only. [Europass](#) CV format is preferred.
- **Main bachelor certificate**
Certified English translation of your main Bachelor's degree, in **PDF** format only. Optionally, if you have not finished your bachelor studies yet, you should upload the official document issued from your university about your current status and the *expected* graduation date. Students applying for a scholarship must upload proof of obtained bachelor degree no later than the dates specified on the [web page](#). In the case you are not able to obtain the degree before the specified deadline, you should contact the admission center (at bdma_admissions@cs.ulb.ac.be) for further assistance. Notice that the possible extension of this deadline depends on your country of origin and the period needed for obtaining the visa for the destination country.
- **Official transcripts for the main bachelor**
University's certified statement of your academic record for the main bachelor degree, translated in English, in **PDF** format only. Official transcript should show the list of courses taken during the degree, the weight of each course (according to your local system), and the mark obtained.
- **Self-evaluation for the main bachelor**
The completed self-evaluation spreadsheets (Figure 5) filled with the information from your main bachelor degree, in **xls** or **xlsx** format.
- **Other Bachelor/Master certificate**
University's certified statement of the academic records for other Bachelor/Master degrees, in **PDF** format only.
- **Other Official transcript**

University's certified statement of your academic record for other Bachelors/Masters degrees, in **PDF** format only.

- **Self-evaluation for other degrees**

The completed self-evaluation spreadsheets for the number of ECTS for other bachelor or master degree, in **xls** or **xlsx** format.

Notes:

- *A self-evaluation excel file filled in the same manner as the previous one, is **mandatory** for each additional bachelors/masters title that is added in the application form.*
- *Bachelor/Master certificate as well as the official transcripts and detail of the calculation are **mandatory** for each additional bachelor/master title that is added in the application form.*

- **A certificate or proof of English proficiency**

In the case that you obtained one of the certificates listed in Section 6.1.5 (Table 1), upload the copy of the certificate. Otherwise, you are required to provide other document(s) that prove(s) your English proficiency, e.g., an official document showing that you were born or grown up in an English speaking country, or an official document showing that at least one of the studies listed in “*Academic qualifications*” were taught in English. **PDF** format only.

6.2.2 Optional Attachments

- **Bachelor/Master thesis**

Document of your bachelor/master degree thesis or final year project, in English and in **PDF** format only

- **Other certificate**

Other certificates for other courses taken, translated in English and in **PDF** format only.

- **Letter of reference 1, 2 and 3**

All letters of reference, must be uploaded by your referees, in English and in **PDF** format only.

Each uploaded document may have a short textual description accompanied with it.

After the appropriate documents are chosen to upload these documents press *Send attachments* button both for mandatory and optional attachments.

Send attachments

✘
Photo[+/-]

A recent passport photo

File

Short description

Please, only jpg;jpeg;png;gif

✘
Cover letter[+/-]

A letter of motivation explaining your motivation to join IT4BI, and why you should be elected (in English)(PDF only)

File

Short description

Please, only pdf

✘
Other certificate[+/-]

Other certificate for other courses taken(PDF only)

✘
Letter of reference 1[+/-]

First letter of reference, must be uploaded by your referent or Master Coordinator (in English)(PDF only)

✘
Letter of reference 2[+/-]

Second letter of reference, must be uploaded by your referent or Master Coordinator (in English)(PDF only)

✘
Letter of Reference 3[+/-]

Third letter of reference, must be uploaded by your referent or Master Coordinator (in English)(PDF only)

✔
Contract[+/-]

Contract for professional experience(PDF only)(in English)

Send attachments

Figure 9: Section for uploading mandatory and optional attachments

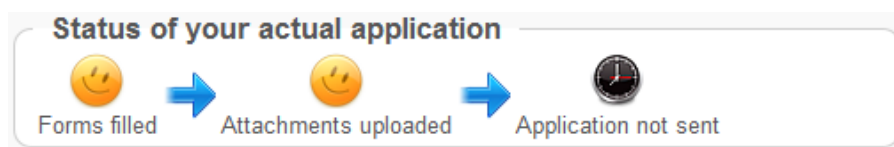


Figure 10: Status of the application after the at least mandatory attachments are uploaded

6.3 Submitting Application Form

After the mandatory attachments are uploaded, you are now allowed to submit your online application. We kindly remind you that early online submissions will be first checked and in case of needed amendments (e.g., missing mandatory files to upload or incorrect Excel file) you would be notified in time as to amend your submission before the deadline. To submit your application, just click the “*Send your application*” link (Figure 11) and then on the following page declare the correctness of the provided data by checking the checkbox *Yes* and finalize the submission by pressing the “*Submit my form!*” button (Figure 12).

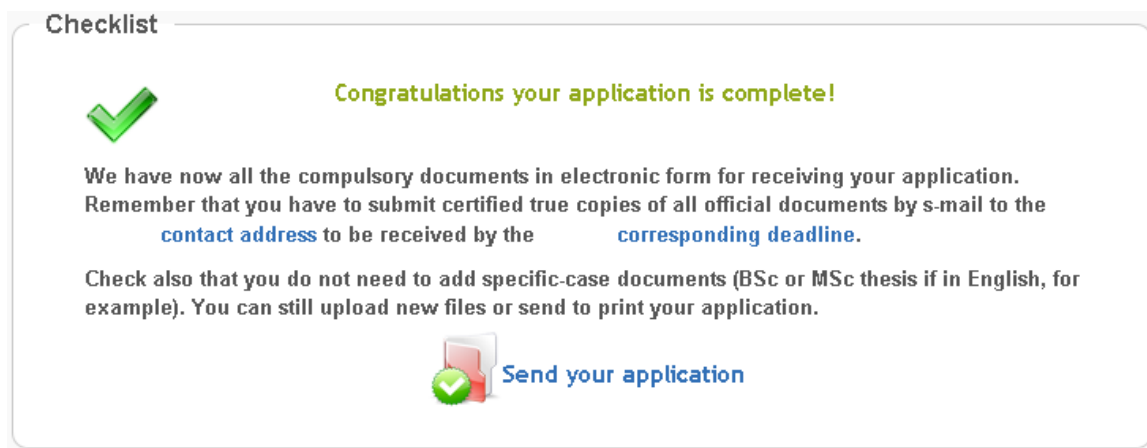


Figure 11: Submitting online application form

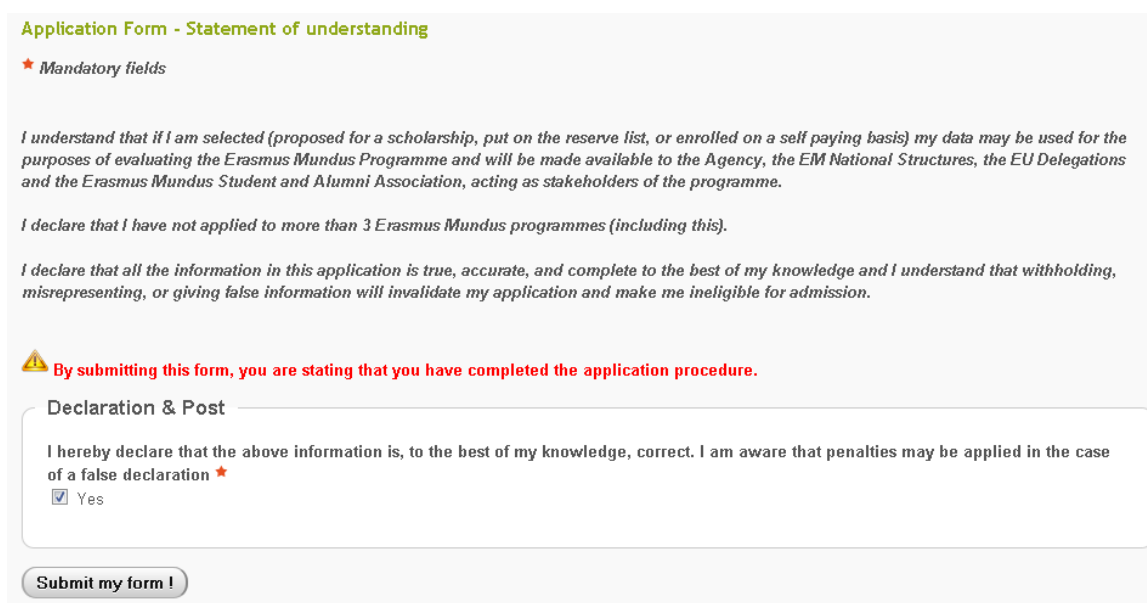
The image shows a form titled 'Application Form - Statement of understanding'. It has a red star icon and the text 'Mandatory fields'. Below this, there are three paragraphs of text: 'I understand that if I am selected (proposed for a scholarship, put on the reserve list, or enrolled on a self paying basis) my data may be used for the purposes of evaluating the Erasmus Mundus Programme and will be made available to the Agency, the EM National Structures, the EU Delegations and the Erasmus Mundus Student and Alumni Association, acting as stakeholders of the programme.', 'I declare that I have not applied to more than 3 Erasmus Mundus programmes (including this).', and 'I declare that all the information in this application is true, accurate, and complete to the best of my knowledge and I understand that withholding, misrepresenting, or giving false information will invalidate my application and make me ineligible for admission.' Below the text is a warning icon and the text: 'By submitting this form, you are stating that you have completed the application procedure.' Underneath is a section titled 'Declaration & Post' with the text: 'I hereby declare that the above information is, to the best of my knowledge, correct. I am aware that penalties may be applied in the case of a false declaration'. There is a checkbox labeled 'Yes' which is checked. At the bottom, there is a button labeled 'Submit my form!'.

Figure 12: Declaring the correctness of provided data

After you submit your application, in the case you want to upload or change the documents or data you previously provided, you must contact the admission center (at bdma_admissions@cs.ulb.ac.be) for further assistance. Your application will be marked as incomplete, so you can go back and make the modifications. Importantly, once you finish modifying your application, you must resubmit the application following the same process as the first time. After submitting your application, you are also allowed to print your application (Figure 13).

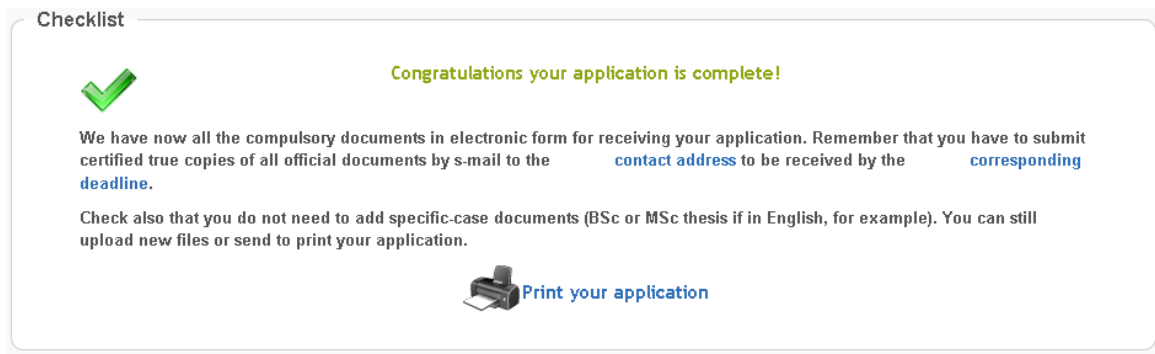


Figure 13: Application successfully submitted - (*Print your application*)



Figure 14: Status of the application after the application is submitted

6.4 Submitting Paper Documents

After you have uploaded all mandatory documents and submitted the online application form, you need to prepare and send the necessary paper copies of the documents to our contact address which can be found at the “[Contact](#)” tab.

Importantly, paper copies must only be sent in case you are accepted into the programme (check the timetable [here](#)). However, you are strongly advised to gather them during the application period and send the documents shortly after acceptance notification to avoid further problems. Not sending the documents (or not receiving them on time) will imply automatic rejection. Please, note that the BDMA consortium is not responsible for late deliveries (s-mail delivery may take up to one month in some cases).

At least the following paper documents (similar to those explained in Section 6.2) must be sent by s-mail ⁸ (i.e., paper mail, postal mail, land mail, ...):

- Paper copy of your passport (pages that contain name, birth date, birth place, validity period, sex, signature and passport number).
- Bachelor certificate(s).
- Official transcripts.
- Proof of English proficiency. If your English proficiency results as in the case of TOEFL are sent automatically by the testing center you may use the code 0550 of Université Libre de Bruxelles instead of sending them by regular mail.

All document **copies** are supposed to be:

1. Provided in **English** (translated if originals are not in English) **and**
2. **Stamped** by some public institution certifying that the copies correspond to the originals.
 - If your country does not allow certifying true copies of official identification documents (e.g., ID and passport), please contact the admission center (at bdma_admissions@cs.ulb.ac.be) for further assistance.
 - The stamp is supposed to be in English. Otherwise, we advise you to provide the translation of the stamp by the sworn translator along with the document translation

⁸“s” stands for “surface”, i.e., standard/traditional mail.

(if original document is not in English).

- Some of the institutions where you can get your copies stamped are:
 - Any embassy or consulate of EU member state in your home country.
 - Any accredited government and public administration of your country (e.g., courts in majority of countries provide “*Hague apostille*” stamp).
 - Notary.

What you should do?

- You should take both the original and copy of your document to the chosen institution and their administration should check that the documents correspond and stamp the copy certifying so. Furthermore, if the original document is not in English then you should provide the translation of the document by the sworn translator together with the translation of the stamp (if necessary).

In the case that you want to send the **original** documents already issued in English, which is **not advisable** as they will not be sent back, there is no need to additionally stamp them. However, all other official documents (copies and translations) need to be attested.

Importantly, notice that failing to send the complete and fully certified documents will result in the immediate rejection of your Erasmus Mundus application.

A Calculation details for title self-evaluating

Respecting the minimum and maximum mark introduced in Section 6.1.2, the marks between the minimum passing mark and the maximum one will be distributed into four intervals (from 1, the lowest, to 4, the highest) defined as follows. Let M and m be, respectively, the maximum and minimum passing mark, and let $s = (M - m)/4$ be the size of the intervals. Then, the intervals are defined as follows:

1. $1 = [m, m + s]$.
2. $2 = (m + s, m + 2s]$.
3. $3 = (m + 2s, m + 3s]$.
4. $4 = (m + 3s, M]$.

For example, the marks in the given grading system:

Minimum passing mark	10
Maximum passing mark	20

Are automatically distributed in a following manner:

Table 2: Example of grade conversion for interval-based numerical marks

Local mark	Score
[10-12.5]	1
(12.5-15]	2
(15-17.5]	3
(17.5-20]	4

1. Textual mark

Some examples of the correct distributions of the marks in the textual (non-interval) grading system are given in the following tables:

Table 3: Example of textual mark equivalences

Mark equivalence 1	D	C	C+	
Mark equivalence 2	B-	B		
Mark equivalence 3	B+	A-		
Mark equivalence 4	A	A+		

Table 4: Example of numeric non-interval mark equivalences

Mark equivalence 1	4	3.7	3.3	
Mark equivalence 2	3	2.7	2.3	
Mark equivalence 3	2	1.7		
Mark equivalence 4	1.3	1		

Calculations:

With the above data provided, the $ECTSconversion = \frac{60 \times original_credits}{\frac{min_grad_credits}{exp_grad_years}}$ and the **1-4 mark** equivalence is automatically calculated. Along with that, the total evaluating values are calculated automatically:

- **ECTS**, the total number of converted ECTS credits of the evaluating title

- **Mark (1-4)**, average mark weighted with the number of ECTS credits obtained per each course.

$$AverageMark(1 - 4) = \frac{\sum (course's\ mark \times course's\ ECTS)}{\sum course's\ ECTS}$$

- **ECTS ACM Major**, the total number of ECTS credits for the courses covering the ACM Major subjects.
- **ECTS ACM Minor**, the total number of ECTS credits for the courses covering the ACM Minor subjects.
- **ECTS CS Subject**, the total number of ECTS credits for the courses covering the computer science subjects (major or minor).