**adolphe merkle institute**
excellence in pure and applied nanoscience

Curriculum for the award of the Degree of

# Specialized Master of Science in Chemistry and Physics of Soft Materials

Accepted by the Faculty of Science on April 18, 2016

# TABLE OF CONTENTS

# 1 General Remarks

This curriculum describes all regulations concerning the Specialized Master studies of Physics, Chemistry and Biology of Soft Materials (MScSoft) at the University of Fribourg. It is based on the regulations of the Faculty of Science as defined in the ***Règlement pour l'obtention des Bachelor of Science et des Master of Science de la Faculté des sciences***, which became operative on February 2nd, 2004, hereafter called the Regulation for short). In case of discrepancies of translation, the French version will be considered authoritative.

## 1.1 Academic Title and Study Structure

The Faculty of Science of the University of Fribourg awards the following official academic title to students who have successfully completed their studies, according to the programme described in this document:

**Specialized Master of Science in Chemistry and Physics of Soft Materials (sp. MSc), University of Fribourg**

The basis for advanced studies leading to the MScSoft are either the BSc in Physics of the University of Fribourg, including a Minor in Chemistry, or the BSc in Chemistry of the University of Fribourg, including a Minor in Physics. The MScSoft study programme provides the student with more advanced courses, focusing on the process of specialization in the field of Soft Materials Science. Completion of the degree allows access to various professional activities in research, education, industry, commerce, and administration. The combination of compulsory courses, electives and project work is designed to provide an interdisciplinary education in the chemistry, physics and biology of soft matter. The 2-year study programme will focus in particular on aspects of soft matter nanoscience, encompassing these three disciplines. Furthermore, the MScSoft gives admittance to doctoral studies.

## 1.2 Prerequisites

Persons in possession of a BSc in Physics or a BSc in Chemistry of the University of Fribourg, or a grade judged equivalent fulfil the formal requirements to apply for admission to the **MScSoft** as outlined in Art. 7 of the Regulation.

Persons in possession of a BSc degree in a different subject can also be accepted into the **MScSoft** study programme based on a decision of the Faculty of Science. The admission decision is made individually for each case and can require, to remedy knowledge gaps, a *Pre-Master programme* preparing admission into the MScSoft or an *Additional-Master programme* to be accomplished in parallel to the MScSoft programme. The number of students is limited and admittance to the MScSoft programme will be subject to a two-stage selection procedure, consisting of a written application followed by an interview. The complete procedure is fully described in Section 3 of this document.

It is strongly recommended to students in BSc in Chemistry or in Physics of the University of Fribourg to choose the minor ("branche complémentaire"/ "Zusatzfach") in the other respective field (i.e. 30 ECTS physics in the BSc in Chemistry, 30 ECTS chemistry for students of BSc in Physics).

## 1.3   Course Structure

The course work leading to the MScSoft degree is subdivided into formal lectures, exercise classes, laboratory activities, seminars, specialized projects, and so on. These courses are measured in units of "**TU**" (corresponding to UE for "unité d'enseignement" or "Unterrichts-einheit"). To each TU, a number of **ECTS[1] points** is assigned, which, following successful completion of the course (e.g., exams) are converted into ECTS credits (see Section 1.3). The MScSoft degree requires 120 ECTS credits, equivalent to the working load of four semesters of full time studies.

The purpose of the different TU types is as follows:
- **Lectures** give a formal introduction to the scientific methods in chemistry, physics and biology and advance scientific thinking. They help in acquiring basic knowledge and understanding the fundamental concepts.
- **Exercise classes** complement the lectures and provide essential help for the understanding and practical application of a lecture's content. Through them, the student will practice and apply the acquired principles and techniques.
- **Laboratory work**, experimental or theoretical, is the basis of scientific research. It provides a controlled environment for the hands-on realization of measurements or chemical syntheses. It is during this work that the student will encounter many of the laboratory procedures and instruments used in research and learn good practice.
- **Seminar presentations** are used to expand the student's knowledge in specialized domains less covered by the formal courses as well as to nurture the development of oral presentation skills for scientific results.
- **Student projects** are a first step in applying the skills learned in the lectures and exercise classes to real research problems.
- The preparation of the **Master thesis**, under the supervision of an experienced researcher, is the actual starting point of scientific research.

The MScSoft degree programme consists of three semesters of formal lectures, exercise classes, projects, seminars, and an interdisciplinary MScSoft project lasting ca. eight months and concluded with the MScSoft thesis. The electives, short projects and masters project should be chosen in a way that guarantees an interdisciplinary curriculum encompassing chemistry, physics and biology. The examinations of the MScSoft TU are only possible after all requirements for the BSc have been completed and after registration in the MSc programme.

## 1.4   Acquired Skills

The aim of the studies leading to the award of the MScSoft is to deepen knowledge and perfect skills in the interdisciplinary field of Soft Materials Science and at the same time develop competence in scientific English. In contrast to other master programmes in materials science that cover the classical broad palette of materials that includes polymers, metals and ceramics, the MScSoft focuses on the physical, chemical and biological aspects of soft matter, including polymers, colloids, foams, gels, granular materials, liquid crystals, and biological materials. In addition, basic aspects of cell growth and behaviour in the presence of soft matter will be covered.

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[1] ECTS stands for *European Credit Transfer System*. One ECTS point corresponds to approximately 30 hours of work. See http://ec.europa.eu/education/ects/ects_en.htm for more information.

The students will develop basic and advanced skills in the synthesis, processing, and characterization of such (nano-) materials, their structure-property relations, as well as their possible applications in different sectors that include the materials industry, consumer products (food, cosmetics, paints), and medicine. They will also acquire practice in scientific writing and knowledge in the ethics of science, innovation and technology transfer. Thus, at the end of the study programme, a student will have shown that he/she can apply their knowledge to accomplish a research project using tools from chemistry, physics and biology, and have learned how to work independently or how to integrate into an interdisciplinary research team.

The award of the degree requires creative and self-critical talents as well as the ability to communicate ideas and work both in English and their native language.

## 1.5 Course Assessment (TU) and Accreditation of ECTS Credits

Acquisition of ECTS credits occurs via three steps: assessment of individual TUs, grouping of TUs into a validation package, and awarding the respective ECTS credits for the completed package.

Exercises and the practical course are assessed following written criteria given at the beginning of the course (e.g., number of submitted exercise papers, number of correctly solved exercises, written report, oral test, etc.). Permission to sit the exam associated with a formal lecture can be subject to the successful completion of the lecture's corresponding exercise class. Likewise, admission to the exam corresponding to a lecture course can be subject to meeting the requirements of the corresponding lab work section.

**Assessment** of lectures is made by an oral and/or written exam, whose type and duration are specified in an appendix to this curriculum. Assessment criteria for courses with pass/fail grades may differ (e.g. written report, oral exam). Exams occur during the official exam sessions in spring, summer, or autumn. Students register for each exam via the GestEns web interface (http://gestens.unifr.ch/sc) within the stipulated delays according to the on-line procedure and using their university provided account and password. The marks range from 6 (highest mark) to 1 (lowest mark). An exam marked below 4 can be repeated, but only once, and at earliest during the next exam session.

A **Validation package** comprises multiple, separately assessed, TUs. Art. 18 of the Regulation determines the number of these packages whereas this curriculum determines their content.

ECTS points are credited according to Art. 19 of the Regulation if:
* the weighted average of the exam marks of a validation package is at least 4. The weighting is given by the number of ECTS points assigned to a TU, and
* the assessment criteria for TU not subject to formal examinations (practical work exercises seminars, etc.) are met.
* no mark is equal to 1.0.

After satisfying those conditions, a package is considered validated and the corresponding ECTS points are converted into ECTS credits and attributed to the student. Upon request, the Dean's office will issue confirmations in which exam results and awarded credits are acknowledged (Art. 22 of the Regulation), provided the exam fee has been paid.

Validation Package MScSO1 comprises all lectures, exercises and lab work that are focused on physics and chemistry of materials, while MScSO2 comprises all lectures, exercises and lab work that are related to biology. MScSO2 also includes all soft skills lectures. Validation Package MScSO3 comprises the Master thesis.

The different validation packages and the respective courses are shown in the GestEns database.

## 1.6   Teaching Languages

The MScSoft courses are taught in English. All exams and written work (project reports, Master thesis etc.) will be in English. In the case of pre-master requirements, BSc-level courses are available at the University of Fribourg only in French or German.

## 1.7   Teaching Coordinator

The teaching coordinator will oversee the execution of the programme and entertain the smooth operation of all teaching activity. He/she will oversee the admission procedure, the award of individual marks and the overall completion of the Masters programme. The teaching coordinator accredits all specific course elements that require approval, as specified in this document and act as arbitrator for all disputes. The teaching coordinator will represent the Adolphe Merkle Institute in the *Committee for Student Requests* (Commission des requêtes des étudiants / Studentengesuchskommission). Two professors of the Adolphe Merkle Institute oversee the work of the teaching coordinator, and will help him/her in the decision making processes.

## 1.8   Admission Committee

The admission committee will conduct the admission procedure described in Section 3. It will evaluate and rank all written applications and decide which of these will progress to the interview stage. It will organize and conduct the admission interviews, producing a final ranking of the candidates.  This ranked list will be submitted to the *Committee for Student Requests* which, together with the Faculty Council, will make the decision of admission. The admission committee shall consist at least of two professors, at least half of which must be from the Adolphe Merkle Institute, with support from the teaching coordinator of the MScSoft programme. The admission committee is appointed by the Executive Board of the Adolphe Merkle Institute.

## 1.9  Ethics and Science

Ethical principles are an integral part of a scientific education. Accepted international conventions must be respected during research and all scientific work whether it be a project, a lecture, a thesis, or a report must be documented. In particular, every external source of information (articles, lectures, web pages, etc.) must be correctly cited. The detection of plagiarised content in any assignment will lead to a disciplinary process carried out by provost's office (Rectorat) of the university of Fribourg. Plagiarism will have serious consequences for the student, including the dismissal from the MScSoft programme and exclusion from the University of Fribourg.

## 1.10  Regulations and Additional Information

Detailed information about prerequisites and studying in the MScSoft can be found in the following documents either by direct download from the University websites, or from the Office of the Adolphe Merkle Institute, Chemin des Verdiers 4, CH-1700 Fribourg:
- Regulation concerning the admission to the University of Fribourg [Règlement d'admission de l'Université de Fribourg / Zulassungsreglement der Universität Freiburg; (*http://www.unifr.ch/rectorat/reglements)*]
- Regulation of 2 February 2004 governing the granting of the titles of Bachelor of Science and Master of Science (*http://www.unifr.ch/science/current/plans_e.php*)

- Curriculum for major and minor branches in the Faculty of Science of the University of Fribourg (*http://www.unifr.ch/science/current/plans_e.php*)
- Course programme of the University of Fribourg (*https://admin.unifr.ch/timetable/*)
- TU database (*http://gestens.unifr.ch/*)
- The current examination session calendar of the Faculty of Science (http://gestens.unifr.ch/sc/pub/f/info/base.asp?page=10503)

Finally, each student obtains a personal and secure space that can be reached using an individual university e-mail password. This space can be reached by the link "Connexion" on web page *http://gestens.unifr.ch/* and allows inscription to courses and exams, access to exam results, the initiation of the process of attestation, etc.

# 2 Specialized MSc in Chemistry and Physics of Soft Materials

[Version 2016, validation packages: MSc1-SO.4000, MSc1-SO.4100, MSc2-SO.5000]

The Specialized MSc in Chemistry and Physics of Soft Materials (MScSoft) is an interdisciplinary programme in the field of soft matter science, drawing on synergies that are present in the Faculty of Science of the University of Fribourg. Led by the Adolphe Merkle Institute (AMI), it integrates into the department-based teaching landscape, interacting and coordinating its activities with other MSc programmes and exploiting synergies that exist within the Faculty. Some of the courses offered in MScSoft are taught jointly with department-based MScs and the MScSoft programme allows its students to gain credits in other courses as long as they are compatible with the *Soft Materials* scope of MScSoft, subject to approval by the teaching coordinator. Equally, the courses offered in the MScSoft are open to students of other programmes subject to their respective regulations.

MScSoft requires 120 ECTS to complete, and can normally be completed within two years. The first semester consists of compulsory courses, and the basic laboratory skills practical course. The second and third semester consist of compulsory and elective courses and a short project each. The selection of elective courses, while maintaining the interdisciplinary nature of the curriculum, allows the student to acquire the knowledge required for the masters thesis. The first three semesters (75 ECTS) are designed to strengthen and complete the student's existing knowledge of chemistry and physics as well as give them an introduction into biology of soft materials. The final part MScSoft programme is dedicated to a research project of 45 ECTS in total, which includes the writing of a masters thesis and an oral presentation of the work. It is carried out in the 3$^{rd}$ and 4$^{th}$ semester and should normally be completed by the beginning of the following academic year.

## 2.1 MScSoft Course Units

The first 1.5 years of the MScSoft studies have three semesters of compulsory core courses (33.5 ECTS), exercises (10.5 ECTS), elective courses and their exercises (11 ECTS), seminar attendance (2 ECTS) and practical and integrated laboratory classes (18 ECTS). Elective classes are offered as part of the 2$^{nd}$ and 3$^{rd}$ semesters. A list of elective classes is offered to the students and they are requested to sign-up for all electives during the first semester. Elective classes are offered and assigned to the two semesters, based on student interest. A minimum of three students are required for an elective class to be offered.

**Semester 1 (Autumn)**

| Code | Title of TU | tot. h | ECTS |
|---|---|---|---|
| | **Compulsory courses** | | |
| BL.0208 | Statistics and experimental design (lecture) | 28 | 3 |
| CH.4701 | Nanomaterials (lecture) | 28 | 3 |
| SO.4102 | Nanomaterials (exercises) | 14 | 1.5 |
| SO.4110 | Fundamentals in cell biology (lecture) | 28 | 3 |
| SO.4111 | Fundamentals in cell biology (exercises) | 14 | 1.5 |
| BE-SO.4120 | Microscopy (lecture) | 28 | 3 |
| ME.7500 | Scientific writing (lecture) | 28 | 3 |
| SO.4150 | Basic laboratory skills (practical course) | 200 | 9 |
| SO.4160 | Seminar attendance I | 14 | 0.5 |
| | | | **27.5** |

**Semester 2 (Spring)**

| Code | Title of TU | tot. h | ECTS |
|---|---|---|---|
| | **Compulsory courses** | | |
| CH.4804 | Basic polymer chemistry (lecture + exercises) | 42 | 4.5 |
| PH.4403 | Soft condensed matter physics (lecture) | 28 | 2 |
| SO.4210 | Scattering techniques (lecture) | 28 | 3 |
| SO.4215 | Soft condensed matter physics (exercises) | 14 | 1.5 |
| SO.4220 | Biophysics (lecture) | 28 | 3 |
| SO.4221 | Biophysics (exercises) | 14 | 1.5 |
| SO.4250 | Short project I (practical course) | 100 | 4.5 |
| SO.4260 | Seminar attendance II | 14 | 0.5 |
| | | | **20.5** |

**Semester 3 (Autumn)**

| Code | Title of TU | tot. h | ECTS |
|---|---|---|---|
| | **Compulsory courses** | | |
| SO.4310 | Functional materials (lecture) | 28 | 3 |
| SO.4311 | Functional materials (exercises) | 14 | 1.5 |
| SO.4320 | Biological materials (lecture) | 28 | 3 |
| SO.4321 | Biological materials (exercises) | 14 | 1.5 |
| SO.4330 | Innovation (lecture) | 14 | 1.5 |
| SO.4350 | Short project II (practical course) | 100 | 4.5 |
| SO.4360 | Seminar attendance III | 14 | 0.5 |
| | | | **15.5** |

**Semester 4 (Spring)**

| Code | Title of TU | tot. h | ECTS |
|---|---|---|---|
| | **Compulsory** | | |
| SO.5000 | Master thesis | | 45 |
| SO.5001 | Seminar attendance IV | 14 | 0.5 |
| | | | **45.5** |

The teaching coordinator will inform the student about the choice and distribution of the TU and available Master thesis subjects. The student's choice and distribution of the TU and Master

thesis subject must by confirmed by the teaching coordinator. An agreement signed by both parties will be made available to the Dean's Office.

**Elective Courses (offered in the 2nd or 3rd Semester; 11 ECTS are required)**

The list of elective courses changes every year and the updated list is published on the web-page of MScSoft http://softmatter.ch. Typically offered elective courses include:

| Code | Title of TU | tot. h | ECTS |
|---|---|---|---|
| CH.4805 | Advanced polymer chemistry (lecture) | 28 | 3 |
| SO.4510 | Polymer engineering (lecture) | 28 | 3 |
| SO.4511 | Exercises in polymer engineering (exercises) | 14 | 1.5 |
| CH.4855 | Physical chemistry of self assembly (lecture) | 28 | 3 |
| BE-SO.4530 | Applied biomaterials (lecture) | 28 | 3 |
| SO.4540 | Soft matter modelling and simulation techniques (lecture) | 28 | 3 |
| SO.4541 | Soft matter modelling and simulation techniques (exercises) | 14 | 1.5 |
| SO.4550 | Materials for energy applications (lecture) | 28 | 3 |
| SO.4560 | Risk-assessment and toxicology of modern materials (lecture) | 14 | 1.5 |
| SO.4570 | Biomembranes (lecture) | 28 | 3 |
| CH.4856 | Principles and materials for solar energy conversion (lecture) | 28 | 3 |
| CH.4024 | Selected topics in materials and inorganic chemistry (lecture) | 28 | 3 |

Elective courses offered in the MSc in Physics and Chemistry and elective courses offered in other MSc programmes at the Universities of Fribourg and Bern can be accredited subject to approval of the teaching coordinator.

## 2.2  Content of the Courses

### 2.2.1  Lectures

The lectures in the MScSoft can be classified in the following modules:
- **Soft materials basics**: The teaching units *Nanomaterials*, *Fundamentals in cell biology*, and *Basic polymer chemistry*, *Soft matter physics* and *Biophysics* teach basic concepts in soft materials science. The advanced compulsory courses and elective courses build on these 5 courses.
- **Essential experimental techniques**: The courses *Microscopy*, *Statistics and experimental design*, and *Scattering techniques*, teach the students the concept underlying important experimental methods used in soft matter science. The practical class *Basic laboratory skills* is an integral part of this module and will provide the students the proficiency of working in scientific laboratories.
- **Soft skills**: The courses *Materials science in a social context*, *Science writing and ethics*, and *Innovation* teach the soft skills which prepare the students to professional and academic life.
- **Advanced courses** include *Functional materials* and *Biological materials* and all elective courses. They will allow the students to extend the basic knowledge and customize their study programme to suit their individual goals.

### 2.2.2  Short Research Projects

Two short projects which will take place in the research laboratories of the Adolphe Merkle Institute (AMI) will provide the students with practical laboratory skills and expose them the research carried out in the AMI. These projects can also be carried out at other laboratories of the

University of Fribourg, subject to authorization by the teaching coordinator. The short research projects are expected to last 100 hours, either in block or distributed over the semester. They are scheduled to take place during the second and third semester, but can be flexibly distributed over all three semester, subject to agreement with the research groups. During the work, the student will become intimately familiar with the experimental techniques and/or theoretical methods applicable to the chemical, physical and biological problems encountered in soft materials research. It should consist in an experimental and/or theoretical project within one research group carrying out soft matter science within the Faculty of Sciences of the University of Fribourg. Alternatively, this mini research project can be carried out in industry, or in the framework of an international exchange at another University abroad, but it must be related to soft materials and be under the supervision of one of the professors teaching in the MScSoft and must be approved by the teaching coordinator. This project cannot be remunerated and it is the responsibility of the students to organize. The results will be written in an extended, detailed report, and presented as an oral, public seminar, independently of where the work was carried out.

The project work should encompass a literature research, a research plan, experiments of a theoretical study and a critical discussion of the results. Before begin, the project has to be outlined on a one A4-page project proposal, which has to be signed of the by teaching coordinator. A project report encompassing not more than 20 A4 pages has to be submitted within 4 weeks of project termination. It will not be accepted after this deadline. The thesis will be graded by the responsible supervisor within 4 weeks of submission.

### 2.2.3  The Seminar of the Adolphe Merkle Institute

Attendance of the weekly scientific seminar series of the Adolphe Merkle Institute is compulsory for all students (attendance lists will be kept). Admission to the course exams each semester and to the oral exam of the Master thesis is subject to an attendance record of at least 80% of the AMI seminars. Exceptions can be granted by the teaching coordinator.

## 2.3   MScSoft Exams and Assessment

Assessment criteria for TUs are specified in the appendices to the curriculum in Chemistry for courses with a CH-code, in Physics for courses with a PH-code, in Medical sciences for courses with a ME-code and listed all together with the SO-coded courses under AMI.

A minimum of 40 ECTS should be acquired after the first year in order to allow a successful completion of the MScSoft. ECTS points are credited according to Art. 19 of the Regulation (see Chapter 1.5 Course Assessment (TU) and Accreditation of ECTS Credits). In addition, a sufficient number of elective courses must be completed with a passing grade so that the total number of ECTS points add up to 120. Examinations must be taken within 1 year of course attendance. Every exam can be repeated only once, and the repeat examination must be taken during the next possible exam session. A non-passing grade in the repeat exam results in the final failure in completing the respective course.

## 2.4   Master's Thesis and Exam

The third validation package of the Master's programme (45 ECTS) consists entirely of the TU dedicated to the *Master's thesis* itself. This work is foreseen to last about eight (8) months. It will start during the 3$^{rd}$ semester of MScSoft studies and will extend over the entire period from the end of the third semester to the beginning of the following academic year. It is research work which the student will do under the supervision of two active researchers in the field of soft

materials science, and during which the student's aptitude for fundamental research will begin to develop.

A project proposal no longer than two A4 pages has to be submitted one month before the formal begin of the research project and has to be approved by the teaching coordinator. As a rule, the project has to fall within the wider field of soft-matter science. The student has to choose a project supervisor and a co-supervisor. They have to be selected from different scientific disciplines and at least one of the two supervisors has to be a member of the Adolphe Merkle Institute. The project work will normally be carried out in the research group of the principal supervisor, but exceptions to this can be approved by the teaching coordinator. The project should encompass an extensive literature research, a detailed project plan, experimental work and/or a theoretical study and a critical discussion of the obtained results. This work has to be carried out according accepted ethical standards (i.e. the code of conduct of the Adolphe Merkle Institute).

The work will be presented as a formal written document, the Master's thesis encompassing a maximum of 100 A4 pages using a minimum font size of 11 and 1 cm page margins, including figures, references and appendices. As a rule this thesis should be of the quality of a research publication and it is the intention to submit the contents of the Master's thesis for publication in a peer-reviewed journal. The Master's thesis should normally be submitted by 31st July. It will be followed by an examination that should take place within six weeks after submission of the thesis.

The Master's thesis will be examined by two examiners, appointed by the teaching coordinator. As a rule, the student is expected to nominate both examiners, but the teaching coordinator has right to overrule this nomination. At least one of the two supervisors has to be from the Adolphe Merkle Institute. The two examiners have to represent two of the different disciplines of chemistry, physics and biology. The project supervisor and/or co-supervisors can be selected as examiner. The examination consists 20-minute oral presentation of the Master's thesis by the student, followed by questions of the examiners. The examiners will each write a separate marked protocol before the exam, and a joint marked protocol of the exam. The Master's thesis and the exam will be judged on the 1 (totally unacceptable) to 6 (excellent) scale. Both examiners will decide on both marks independently. A pass degree for MScSoft requires an average of the four marks of 4 and above. Should the marks of the two examiners, for either the thesis of the exam, differ by one mark or more, all examination protocols have to be submitted to the teaching coordinator which will determine the final overall mark. If a work is judged insufficient, a second thesis project may be offered to the student on a different subject.

Successful completion of the SMSc1 and SMSc2 results in the right to the title **Specialized Master of Science in Physics and Chemistry of Soft Materials (Sp. MSc), University of Fribourg**.

# 3 Admission Regulations for the Specialized Master Programme

## 3.1 Formal Requirements

Admission to the Masters programme may be granted provided the following two conditions have been met by the applicant:

- Satisfying the University admission requirements as defined in the *Règlement concernant l'admission à l'Université de Fribourg*,
- The student possesses a Bachelor's degree in Physics or Chemistry. Candidates with a Bachelor from a different discipline in Science can be admitted subject to approval by the Committee of Student Requests.
- The student successfully passes an admission procedure consisting of a written application and an interview

The Faculty of Science establishes and maintains the list of equivalent degrees. Only written applications of candidates holding a degree quoted in that list will be considered. Candidates with degrees not on the list will be required to submit an application, in writing, to the Committee of Student Requests (*Commission des requêtes des étudiant-es*, care of: Office of the Dean, Faculty of Science, Musée 8, CH-1700 Fribourg, Switzerland), which will decide on eligibility. In some cases, endorsement may be conditionally based on additional coursework requirements: these may be satisfied in parallel with the regular master's work, or the student may be required to enter as a qualifying student. Final acceptance in the Specialized Master's programme for a qualifying student is contingent on the successful completion of these pre-Master requirements.

## 3.2 Admission Procedure

Every applicant will be assessed individually. The students will be assessed in terms of three criteria:

1. academic ability and potential

2. independent thought and creativity

3. motivation and enthusiasm for the course.

The assessment of the applications according to these criteria will take place in a two stages process.

Stage one consists of a written application, containing a curriculum vitae, certificates of earlier education, a letter of motivation, and two letters of reference. The letter of motivation is particularly important and should explain the students motivation for choosing the **MScSoft** programme, an explanation in how far he/she will be able to follow the curriculum, and in which way the programme will contribute to his/her further career. The letter of motivation should further demonstrate the three key aspects listed above.

The application committee will rank all applications according the three listed criteria, and decide which applications will enter the second stage. The application committee will have the right to revisit and alter the ranking list throughout the application process.

The second stage of assessment will consist of a personal interview by the admission committee at the Adolphe Merkle Institute. In exceptional cases (i.e. where visa requirements prevents travel to Switzerland), the candidate will be interviewed by a video link, (e.g. Skype or WebEx). The interview will last 20 minutes, and focus on the three criteria listed above. All candidates will be ranked, and the admission committee will decide which of the candidates will gain entry to the **MScSoft** programme. A protocol of the admission process will be filed at the Adolphe Merkle Institute.

Following both admission stages, the teaching coordinator will notify all candidates of the outcome of their application by electronic mail. A list of successful candidates will be submitted to the Committee for Student Requests (Commission de requête des étudiants) which, together with the Faculty Council, will make the final decision of admission.

The deadline for submission of the written application is 1 March of every year. The interviews will typically take place in April and May, and the final decision will usually be communicated by the end of May.