



**Master of Science in Applied Artificial Intelligence  
Structure of the study programme**

Faculty of Sciences and Technology

**CHATEAU D'AIRE**  
**SWISS UMEF University of Applied Sciences institute**  
185-187 Route d'Aire - 1219 Aire  
Geneva – Switzerland  
T: +41 (0) 22 732 07 12 – E: [info@swiss-umef.ch](mailto:info@swiss-umef.ch)  
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### **1. Name of institution:**

SWISS UMEF University of Applied Sciences institute

[www.swiss-umef.ch](http://www.swiss-umef.ch)

[info@swiss-umef.ch](mailto:info@swiss-umef.ch) T.: + 41 (0) 22 732 07 12

### **2. Accreditations and Recognitions**

SWISS UMEF was founded in 1984, in accordance with Swiss Law, as a higher private education institution in Geneva and is institutionally accredited by the Swiss Accreditation Council, in accordance with the Higher Education Act (HEdA).

SWISS UMEF is proud to have been the first private federally accredited institution as a University of Applied Sciences Institute in the Canton of Geneva.

### **State recognition :**

To ensure the credibility and recognition of educational institutions in Switzerland, [the Swiss Confederation maintains an updated list of accredited institutions](#). SWISS UMEF is proud to be included in this prestigious list, reflecting our commitment to high-quality educational standards and adherence to the stringent requirements set by Swiss educational authorities. This accreditation is evidence of our dedication to excellence in higher education and our ongoing efforts to provide our students with the best possible educational experience.

### **3. Location:**

Château d'Aïre

Route d'Aïre 185-187

1219 Aïre – Geneva – Switzerland

### **4. Languages of instruction:**

SWISS UMEF provides educational programmes in two distinct language sections: English and French. This bilingual approach allows participants to choose the language of instruction that aligns with their preferences and needs.

### **5. Programme title:**

Master of Science in Applied Artificial Intelligence (MSc)

### **6. Entry requirement:**

Should the candidate be accepted on the basis of the documents supplied, an interview lasting between 30 and 60 minutes is conducted with a specialist of the field selected. For candidates not residing in Switzerland, the interview will be conducted through electronic media.

1. Application form;
2. Copies of the official certificate, A Bachelor's degree or equivalent, from an approved University / College;
3. Copies of transcripts;
4. Copy of identity card or passport;
5. CV;
6. Two passport photos;
7. Motivation letter.

## 7. Language requirements:

All candidates who want to study in their native language (English or French), or who have followed a minimum of three years of studies in the language in which they wish to follow courses at SWISS UMEF, are exempted of the requirement of a language test.

Other applicants need to present evidence of having passed the following language tests with requirements of levels as indicated:

English section: IELTS 6.0 / TOEFL 70/ Cambridge exam (official English exam results) or proof of studying previously in an English for a minimum of 3 years

Full details appear in the ‘Admission Requirements’ document.

## 8. Programme intakes:

October.

~~The programme offers two intake periods each year, providing prospective participants with flexibility in choosing when to start their academic journey. The programme intakes are scheduled for: October and March.~~

~~There is the possibility of flexible dates for the start of the study programme if there is a sufficient number of candidates.~~

## 9. Tuition and structure:

SWISS UMEF, a pioneer in education in Geneva, is proud to announce the launch of a new full scholarship programme in celebration of its 40th anniversary. These scholarships are designated for new students enrolled in the Master’s programme in Applied Artificial Intelligence for the academic year 2024-2025.

They will fully cover the tuition fees for the two-year duration of the Bachelor’s programme, which is the standard length of this course. The application deadline is set for July 31, 2024, for students residing in Switzerland and the EU, and June 30, 2024, for non-EU candidates.

**Students awarded these scholarships will only pay CHF 3,800 per year**, which covers administrative fees, payable in a single instalment. These fees, significantly lower than the standard rate of CHF 20,500 per year, are exclusive to this programme and are non-transferable and non-refundable under any circumstances.

## 10. Faculty profile:

Master or doctoral degree with a professional experience in the relevant subjects.

Mother tongue or near-mother-tongue French or English, as well as knowledge of other languages.

## 11. Length of studies:

The total duration of studies is of a minimum of four semesters and a maximum of six semesters, the latter with the approval of management.

Number of hours:

|                             |                  |
|-----------------------------|------------------|
| First year                  | 600 hours        |
| Second year                 | 300 hours        |
| <b>Total over two years</b> | <b>900 hours</b> |

### **12. Number of credits:**

120 European Credits Transfer System (ECTS).

Each full-time academic year is equivalent to 60 ECTS credits and a full-time semester is thus equal to 30 credits. ~~The total number of ECTS credits for a particular programme determines the average regulatory duration of the study plan for that particular programme.~~

The regulations and study plan of each title establishes the ECTS credits as well as the conditions to obtain the said credits and their spread over the different teaching units (courses, seminars, practical work, internships, etc). To qualify for a Master's degree, the student must obtain a total of 120 ECTS credits.

### **13. General characteristics:**

Training is divided into modules. The ECTS credits of each module are divided into lecture hours, exercises and practical sessions in class (onsite contact hours), examination time, personal preparation and working hours (about 1/3 class work, 2/3 personal student work). These periods may be adjusted, depending on the subjects taught, but the fundamental principle is that each 30-hour work period is worth 1 ECTS credit.

### **14. Methods of instruction:**

The course is developed through a variety of learning techniques: lectures, oral case analysis presentations, research, presentation of exercises by students in class, tests, examinations, etc. Students are responsible for preparing the reading material and accompanying exercises in advance of the class session, in order to participate in class discussion.

### **15. Satisfaction evaluation:**

- A. Student Evaluations: Participants evaluate professors at the conclusion of each course.
- B. Annual Comprehensive Evaluation: Participants participate in a comprehensive annual survey evaluation of all SWISS UMEF activities at the end of each year.
- C. Peer Assessments: Peer evaluations are conducted.
- D. Annual Institutional Evaluation: The faculty and administration of SWISS UMEF conduct an annual survey evaluation at the end of the year.

### **16. Attendance to courses and seminars:**

Attendance, punctuality and an active participation in all classes are prerequisites to success both as regards grades and as regards the final success of the student in the business world. Assiduity is an integral part of the grade, and should participation be lower than 80%, the student will be unable to obtain the 10% of the grade for class participation and activities. Should his attendance be lower than 50%, he cannot attend exams and will have to retake the entire class. All absences must be justified by a medical, or other type, of certificate, and management will decide on the validity of this excuse.

Note: Two 'late' will be equal to an absence.

### **17. Assessment method:**

Each module, as well as the internship and the research project, are assessed by an oral or written examination, a test, an essay or an oral presentation so as to obtain a final grade.

Should the evaluation methods not be indicated in the syllabus, it is left to the decision of the faculty member who informs the students at the beginning of the course.

The member of faculty also provides information on the expected content, the pedagogical material and the authorized documentation. In every case, the field covered by the exam is that of the subject taught until the examination date.

#### **Examinations:**

For every subject taught, two examinations are held: a mid-term examination and a final examination. The professor has the possibility of replacing a formal mid-term examination by, for instance, a case study with an oral presentation, or with any other practical piece of work that can be graded.

The oral examination must last a minimum of twenty minutes and a maximum of one hour. A written examination has a duration of between two and four hours depending on the subject.

#### **Examination organisation modalities:**

**PROCEDURE:** The system of evaluation applicable for each given module reflects the principles of the policy regarding evaluation. The mode of evaluation is itself determined by the main module and adapted to the specification of each module.

**SUPERVISION:** Examinations are supervised by lecturers of the subject or by a faculty staff member appointed by Academic Affairs.

**AUTHORISED MATERIALS:** Each lecturer may authorise students to have and consult documents during an examination. Where applicable, the lecturer must submit the list of authorised documents to the Head of student affairs at least one hour before the start of the examination.

**EXAMINATION PROCEEDINGS:** Direct or telephone communication between students is prohibited during the examination. Exits are prohibited during the examination: the invigilator may exceptionally allow one student at a time to exit the hall, on the condition that he/she is escorted by SWISS UMEF staff.

**LATE STUDENTS:** Any student who arrives late for the examination will only be authorised to sit for the exam if, upon arrival, the examination sheets have not yet been distributed.

**EXAM CANCELLATION:** If one of these rules is violated, the student will be given the disqualifying mark of 1.00 out of 6.00, and must sit for the examination again at the end of the period following the course, and must pay examination fees.

**PASS GRADE:** An examination is considered as passed if the grade is equal to or more than 4.00.

### **18. Grading and credit system:**

The final grades per subject include not only those of the final examination, but also take into account attendance and answers to the questions of the professor (exercises, essays and other possible assignments).

#### **Methods of Evaluation**

The final grade is computed as follows:

- 10% for participation (attendance, exercises, practical sessions, etc.),
- 40% for the semester examination,
- 50% for the final examination.

**Grading scale:**

|   | <b>ECTS Scale</b> | <b>SWISS UMEF Grading System</b> |
|---|-------------------|----------------------------------|
| A | EXCELLENT         | 6.0, 5.75, 5.5, 5.25             |
| B | VERY GOOD         | 5.0, 4.75                        |
| C | GOOD              | 4.50                             |
| D | SATISFACTORY      | 4.25                             |
| E | PASS              | 4.00                             |
| F | FAIL              | < 4.00                           |

At the end of each examination session, the Academic Affairs pronounces the success or failure of each student. If all grades are equal to or more than 4.00, the student is automatically promoted to the next semester.

The lecturer who gave the course may revise a grade only if it is comprised between 3.50 and 4.00.

If a student resits for an assessment, the new grade will replace the previous one.

If credits were earned during the previous assessment, they will not be carried forward during the resit examination. Credits are earned on the basis of the new grade obtained.

After deliberations and proclamation of results, the secretariat will issue to each student a transcript mentioning the number of credits earned.

**Absence:**

Any unjustified absence for an assessment will be recorded as such in the transcript and will correspond to ONE in the examination concerned. The student will have to resit for the examination at the end of the following course period and pay examination fees.

Any student who does not sit for an examination and who can justify that it was for reasons beyond his/her control may draft a written request to the Academic Affairs, along with supporting documents, within three days following the examination date. If the justification is accepted, the student will be allowed to sit individually for the examination which will have themes (exercises, essay or other) that are different from those in the previous examination.

The cost to organise the resit examination will be borne by the student.

**Cheating and Plagiarism:**

Any cheating, attempted cheating or plagiarism will be recorded as such in the transcript of grades and will translate into failure of the assessment concerned.

Moreover, SWISS UMEF Management may cancel all examinations which the student sat for during the session; the cancellation of the session leads to the candidate failing the said session.

SWISS UMEF Management may also consider the failure of the concerned assessment as final.

SWISS UMEF Management may decide to refer the cheater, attempted cheater or plagiariser to the SWISS UMEF Disciplinary Council.

### **19. Internship and research project:**

The earning of 60 ECTS credits gives access to registration for the research project. Instructions pertaining to drafting and evaluation modalities of the internship, where applicable, and the research project are drafted for each Master's degree.

The evaluation of the internship (where applicable) and project is done on the basis of the quality of the student's personal work, written work and eventually, the student's oral defence; it will be sanctioned by a single grade point between ONE and six. Internship and research project credits will be earned only if the grade point awarded is equal to or more than 4.00. In the event of failure, when the grade point earned is less than 4.00, a new version of the written work may be presented, subject to the period for the award of the Master's degree. A second failure will lead to disqualification.

### **20. Disqualification:**

The following will be considered as having failed and will be disqualified from SWISS UMEF:

- a) Any student who did not earn at least 48 ECTS credits by the end of the second session after the first year of studies;
- b) Any student who has not earned at least 96 ECTS credits by the second session after the second year of studies;

Cases of cheating, plagiarism, attempted cheating or plagiarism are reserved.

Disqualification is pronounced by the SWISS UMEF Management.

### **21. Repeating and promotion on trial:**

The student who has not obtained a number of credits equal to or greater than 48 by the end of the second session following the first two semesters of study will not be allowed to enrol in the second-year courses.

To enrol in the second-year courses, the student must complete a minimum of 60 credits for definitive admission or 48 credits to request conditional admission. Conditional admission is decided by the Directorate upon the student's motivated request.

### **22. Degree awarded by:**

SWISS UMEF University of Applied Sciences institute.

### **23. Peer coaching requirement:**

All students enrolled in the second years are required to dedicate three hours per week to coach first-year students.

Coaching includes providing guidance on academic content and understanding of all required procedures at SWISS UMEF.

### **24. Equipment and materials:**

Each student is required to possess a personal computer that meets the programme's technical specifications.

Students are responsible for purchasing all necessary software and academic materials.



## 25. Master of Science in Applied Artificial Intelligence

### **Description:**

The Master's programme in Artificial Intelligence aims to provide students with advanced knowledge of AI concepts, including machine and deep learning. The programme develops the ability to effectively manage AI projects while instilling an understanding of the ethical and societal implications of AI. Students will become familiar with global AI policies and regulatory frameworks, while cultivating entrepreneurial skills. Finally, the programme offers practical exposure through a final project or internship, allowing students to understand the challenges and implementation strategies of AI in different domains.

### **Objectives:**

1. Acquire advanced expertise in artificial intelligence, including machine learning, deep learning, and reinforcement learning techniques.
2. Develop skills in managing AI projects using agile methodologies such as Scrum for optimal efficiency.
3. Master Big Data and Cloud technologies, essential for successfully integrating AI solutions into various contexts.
4. Deepen understanding of the ethical and societal implications of AI, focusing on a responsible and ethical approach in the design and use of AI systems.
5. Familiarise with international AI policies and regulatory frameworks to adeptly navigate the legal aspects of implementation.
6. Develop change management skills specifically tailored to the successful implementation of AI in various industrial sectors.

### **Learning Outcomes:**

1. Demonstrate the ability to effectively plan, execute, and control AI projects in complex environments.
2. Exhibit competence in interpreting and using data to develop relevant AI models and solutions.
3. Demonstrate the capacity to identify, evaluate, and resolve ethical dilemmas related to the design and use of AI systems.
4. Communicate clearly and effectively with diverse stakeholders on technical and ethical AI topics.
5. Critically evaluate different AI approaches and solutions to make informed decisions.
6. Adapt quickly to technological advancements and changes in the AI field.

### **Career Opportunities:**

- AI Project Manager
- AI Analyst
- AI Ethicist
- AI Strategy Consultant
- AI Application Developer
- Data Governance Expert

# Master of Science in Applied Artificial Intelligence

## First year

### First semester 30 credits (ECTS)

| Number  | Title                                    | ECTS Credits | Periods of Courses |
|---------|------------------------------------------|--------------|--------------------|
| MIA 400 | Machine learning and deep learning       | 6            | 60                 |
| MIA 401 | Advanced project management in AI        | 6            | 60                 |
| MIA 402 | Data management & governance             | 6            | 60                 |
| MIA 403 | AI in business decision making           | 6            | 60                 |
| MIA 404 | Advanced study of ethical considerations | 6            | 60                 |
|         | <b>Total Course Required Credits</b>     | <b>30</b>    | <b>300</b>         |

### Second semester 30 credits (ECTS)

| Number  | Title                                              | ECTS Credits | Periods of Courses |
|---------|----------------------------------------------------|--------------|--------------------|
| MIA 405 | Reinforcement learning and AI optimization         | 6            | 60                 |
| MIA 406 | Global AI policies and regulatory frameworks       | 6            | 60                 |
| MIA 407 | Change management strategies for AI transition     | 6            | 60                 |
| MIA 408 | AI innovation and entrepreneurship                 | 6            | 60                 |
| MIA 409 | Economic forecasting and AI-driven market dynamics | 6            | 60                 |
|         | <b>Total Course Required Credits</b>               | <b>30</b>    | <b>300</b>         |

### Third and Fourth semester 60 credits (ECTS)

| Number  | Title                                                    | ECTS Credits | Periods of Courses |
|---------|----------------------------------------------------------|--------------|--------------------|
| MIA 500 | Financial intelligence and algorithmic trading           | 6            | 60                 |
| MIA 501 | Global diplomacy and AI-driven policy making             | 6            | 60                 |
| MIA 502 | Industrial Automation and AI in Precision Medicine       | 6            | 60                 |
| MIA 503 | AI-driven marketing strategies and communication systems | 6            | 60                 |
| MIA 504 | AI-powered learning systems and education policy         | 6            | 60                 |
| MIA 500 | Capstone project or internship                           | 30           |                    |
|         | <b>Total Course Required Credits</b>                     | <b>60</b>    | <b>300</b>         |

The student can choose at the beginning of the second year to write a final thesis or to complete an internship in a company and produce a report. Both the thesis and the report must be defended before a jury and count for 30 credits (ECTS).

#### 26. Remark:

SWISS UMEF has the right to accept or refuse a candidate without having to motivate its decision.

The content of all our programmes are the property of SWISS UMEF.  
SWISS UMEF reserves the right to introduce changes.