# Mathematics with financial engineering, master study programme, second Bologna cycle

## COURSE STRUCTURE of the study programme

The study programme consists of 14 courses, 2 seminars, and a Master's thesis. Courses are divided into compulsory courses (6 courses), internal elective courses (5 courses), and external elective courses (3 courses).

Students may register the topic of their Master's thesis upon enrolment in the second year. All remaining academic requirements (compulsory and elective courses) must be completed prior to the defence of the Master's thesis.

Students complete the programme once they have fulfilled all academic requirements, successfully defended their Master's thesis, and accumulated a total of 120 ECTS under the European Credit Transfer and Accumulation System (ECTS).

All courses in the study programme carry 6 ECTS.

The following section presents the structure of the study programme by year, as well as the compulsory and internal elective courses and the available study tracks.

Table 1: Structure of the study programme

| Year of study | Study obligation | Number | ECTS-credits (ECTS) | |
|---|---|---|---|---|
| | | | ECTS | ECTS/Year of study |
| 1. | Compulsory courses | 5 | 30 | 60 |
| | Internal elective courses | 3 | 18 | |
| | External elective courses | 1 | 6 | |
| | Seminar | 1 | 6 | |
| 2. | Compulsory courses | 1 | 6 | 60 |
| | Internal elective courses | 2 | 12 | |
| | External elective courses | 2 | 12 | |
| | Seminar | 1 | 6 | |
| | Master's Thesis | 1 | 24 | |

Legend:

ECTS credits (ECTS) = credit points awarded under the European Credit Transfer and Accumulation System (ECTS). The credit system facilitates student mobility and the mutual recognition of completed academic requirements.

ECTS credits represent an average estimate of the time required to complete a course and include both organized forms of instruction (lectures, seminars, seminar and laboratory exercises, fieldwork, practical training, etc.) and the student's independent work (exam preparation and other course-related obligations, etc.). One (1) ECTS credit corresponds to 25 to 30 hours of study workload. Credits are awarded upon the successful completion of the requirements for an individual course.

Table 2: First year of study

| No. | Course | ECTS |
|---|---|---|
| 1. | Probability II | 6 |
| 2. | Financial Engineering Practicum | 6 |
| 3. | Statistical Practicum | 6 |
| 4. | Game Theory | 6 |
| 5. | Fiscal Policy Analysis | 6 |
| 6. | Internal elective course I | 6 |

| No. | Course | ECTS |
|---|---|---|
| 7. | Internal elective course II | 6 |
| 8. | Internal elective course III | 6 |
| 9. | External elective course I | 6 |
| 10. | Seminar I | 6 |

Table 3: Second year of study

| No. | Course | ECTS |
|---|---|---|
| 1. | Selected Topics in Financial Mathematics | 6 |
| 2. | Internal elective course IV | 6 |
| 3. | Internal elective course V | 6 |
| 4. | External elective course II | 6 |
| 5. | External elective course III | 6 |
| 6. | Seminar II | 6 |
| 7. | Master's Thesis | 24 |

## ELECTIVE courses

The study programme includes eight elective courses, of which five are internal electives and three are external electives. As an internal elective, students may also choose any course offered within the related Master's study programmes in Mathematical Sciences, Computer Science, and Data Science, provided that the course is not listed among the compulsory or internal elective courses of the Mathematics with Financial Engineering study programme.

At least two of the five internal elective courses must be mathematics courses from the Master's study programme in Mathematical Sciences. The appropriateness of the selected internal elective courses is reviewed by the study programme coordinator.

Tabela 4: Internal elective courses

| No. | Course | ECTS |
|---|---|---|
| 1. | Statistics | 6 |
| 2. | Financial Markets | 6 |
| 3. | Stochastic Processes | 6 |
| 4. | Asset Pricing | 6 |
| 5. | Valuation of Insurance Products | 6 |
| 6. | Time Series | 6 |

Table 4 lists **all internal elective courses** accredited within the Mathematics with Financial Engineering study programme. However, UP FAMNIT **offers only a selection of elective courses** from the broader pool each academic year. In doing so, the faculty takes into account its staffing and financial capacities, as well as student interest in individual courses. The final list of elective courses offered to students for the upcoming academic year is published prior to the start of enrolment for that year.

**External elective courses** may be selected within accredited study programmes at higher education institutions in Slovenia or abroad, primarily in the fields of financial mathematics, economics, accounting, business finance, or legal subjects related to economics and finance. Depending on the student's interests and with the approval of the programme coordinator, courses from other academic fields may also be selected. Elective mobility is also possible in an international context. In the second year, students may, within the framework of external electives, undertake practical training in a work environment lasting three weeks, subject to prior coordination with the study programme coordinator.

**Within the external elective component in the second year**, students may complete Practical Training in a Work Environment (lasting three weeks and carrying 6 ECTS). The purpose of this training is to enable students to gain professional experience in the fields of mathematics and financial engineering. The training is carried out in a real work environment under the supervision of a qualified mentor in finance, economics, or a related field. Students who choose to undertake practical training must first coordinate with the study programme coordinator and then record their decision on the enrolment form when enrolling in the second year. More detailed instructions are available in the section Practical Training.

For assistance and guidance in selecting elective courses and study tracks, students may consult the study programme coordinator.

**Contact:**
Programme coordinator:
Assoc. Prof. Mihael Perman
mihael.perman@upr.si

Student Services
referat@famnit.upr.si