COURSE DATA

DATA SUBJECT

Code: 35009
Name: External internships
Cycle: Undergraduate Studies
ECTS Credits: 9
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1107 - Degree in Mathematics	Facultat de Ciències Matemàtiques	4	Indefinite (Individuals)

SUBJECT-MATTER

Degree	Subject-matter	Character
1107 - Degree in Mathematics	External internship	INTERNSHIPS

COORDINATION

SUMMARY

The External Internships, an optional subject of the Bachelor's Degree in Mathematics, constitute a first contact of the student body with the world of work. Their placement in the fourth year of the Bachelor's Degree, together with the requirement of having passed at least 180 credits, guarantees that students have acquired the minimum skills necessary for their professional performance.
These internships are carried out under the supervision of a lecturer from the Faculty of Mathematical Sciences, a specialist in the field of the position offered. They consist of a stay in a company or institution, where the student develops activities related to the academic content of the degree. In this way, internships allow you to apply and expand the knowledge acquired, prepare you for professional practice in business or research environments, promote teamwork and provide practical experience that improves employability

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

To register in the module External Practices, the student must have passed 180 credits between compulsory and optional subjects of the Degree.

COMPETENCES / LEARNING OUTCOMES

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Ability to work in teams.

Adapting to new situations.

Apply the knowledge in the professional world.

Argue logically in decision-making.

Capacity for criticism.

Capacity for organization and planning.

Capacity of abstraction and modeling.

Knowing the time and the historical context in which occurred the great contributions of women and men in the development of mathematics.

Participate in the implementation of software and learn mathematical software.

Solve problems that require the use of mathematical tools.

Visualize and interpret the solutions obtained.

DESCRIPTION OF CONTENTS

Training program 1. Statistical analysis

Specific objectives:

- Apply statistical knowledge in real professional contexts.
- Develop skills in the use of statistical software for data analysis.
- Produce technical reports interpreting statistical results for applied purposes.

Activities:

- Data collection, storage, and cleaning.
- Application of statistical techniques for exploratory and inferential analysis.
- Use of statistical packages (R, SPSS, Python, etc.).
- Preparation of result reports.

- Development and evaluation of statistical models.

Profile of the company or institution:

- Companies and institutions in the health, industrial, social, technological, etc. sectors, that work with large volumes of data.
- Research centers, statistical consultancies, or analysis departments.

Profile of the external supervisor:

- Professional with experience in data analysis and applied statistical techniques.
- Proficiency in statistical tools and ability to guide the student in preparing reports.

Training program 2. Consultancy

Specific objectives:

- Apply mathematical tools to solve real problems in business and industry.
- Develop modeling and analysis skills for decision-making.
- Produce clear, useful, client-oriented technical reports.

Activities:

- Analysis of quantitative and qualitative information for decision-making.
- Application of mathematical modeling techniques (optimization, simulation, etc.).
- Preparation of technical reports and proposed solutions.
- Support in production planning, inventory management, or process improvement.
- Route optimization, design of distribution networks.

Profile of the company or institution:

- Consulting firms, logistics, transport, operations, strategic planning, or engineering companies.
- Innovation or process analysis departments in public or private institutions.

Profile of the external supervisor:

- Professional with experience in consulting, modeling, or process analysis.
- Capable of guiding the student in the practical application of mathematical tools.

Training program 3. Finance

Specific objectives:

- Apply mathematical and statistical tools in financial analysis.
- Understand and model the behavior of financial variables.
- Develop skills in building predictive models and risk assessment.

Activities:

- Analysis of financial time series and preparation of projections.
- Development of asset valuation and portfolio management models.
- Evaluation of financial risks and investment scenarios.
- Support in auditing, management control, or financial planning tasks.
- Preparation of financial and technical reports.

Profile of the company or institution:

- Banks, insurance companies, investment firms, financial consultancies.
- Financial departments of large companies or public institutions.

Profile of the external supervisor:

- Professional with experience in finance, quantitative analysis, or financial control.
- Knowledge of financial models and the use of sector-specific software tools.

Training program 4. computer science

Specific objectives:

- Apply mathematical knowledge to the development of IT solutions.
- Gain experience in programming, algorithm design, and data management.
- Contribute to the development and validation of applications and technological tools.

Activities:

- Design of algorithms and programming in various languages.
- Database design and management.
- Development of mathematical applications and tools.
- Implementation of numerical or computational models.
- Testing, validation, and code documentation.

Profile of the company or institution:

- Tech companies, startups, development or data analysis departments.
- Public or private institutions with technological innovation projects.

Profile of the external supervisor:

- Professional with experience in software development, data analysis, or computer engineering.
- Knowledge of programming and collaborative work methodologies.

Training program 5. research in mathematics

Specific objectives:

- Introduce the student to the process of mathematical research.
- Develop skills in literature review, modeling, and validation of results.
- Encourage active participation in ongoing research projects.

Activities:

- Collection and analysis of scientific literature.
- Attendance at seminars, group meetings, and training activities.
- Collaboration in the development of mathematical models or algorithms.
- Data analysis or simulations in the context of the project.
- Writing of technical documents or draft publications.

Profile of the company or institution:

- University departments, research institutes, R&D groups, laboratories, or technology centers.
- Funded projects with student involvement (e.g., UV or national projects).

Profile of the external supervisor:

- Researcher in mathematics or related areas, with experience in project leadership or active

participation in established research lines.

Training program 6. teaching in secondary schools

Specific objectives:

- Become familiar with the tasks involved in teaching at the secondary education level.
- Apply and adapt mathematical knowledge to the non-university educational context.
- Observe and participate in lesson planning, assessment, and classroom management.

Activities:

- Attendance in classes as an observer and teaching assistant.
- Preparation of teaching materials and practical exercises.
- Participation in support, assessment, or tutoring activities.
- Collaboration in complementary activities (projects, science fairs, etc.).

Profile of the company or institution:

- Secondary education schools, either public, semi-private, or private, offering ESO or Bachillerato.
- Schools with educational innovation programs or involvement in math outreach projects.

Profile of the external supervisor:

- Mathematics teacher with experience in compulsory or post-compulsory secondary education.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at the internship centre	180,00
Attendance at supplementary activities	0,00
Monitoring and tutoring of internships	15,00
Total hours	**195,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Independent study and work	0,00
Preparation of supplementary reports	0,00
Preparation of the internship report and evaluation of the internship	30,00

Total hours	**30,00**

TEACHING METHODOLOGY

The main objective of the external internships is to train students to operate in real and multidisciplinary professional environments. The aim is for the student to apply the knowledge acquired during the program independently and to develop professional skills in real-world contexts.

The external internships can be carried out in two modalities:

· **a) Autopracticum**: The student contacts a company or institution of interest, reaches a preliminary agreement, and proposes an activity plan. This plan must be previously approved by the Internship Committee of the Faculty of Mathematical Sciences.

· **b) Assigned internships**: When the organization submits its internship offer and the student selects the placement based on their academic transcript's grade point average.

In both cases, the internship will begin with an interview with the academic tutor, during which the tutoring schedule for monitoring the work will be provided, and, if applicable, the preliminary documentation related to the tasks to be carried out at the host organization will be delivered.

Each student will have two types of supervision:

- **An external supervisor** (from the host organization), who will be responsible for welcoming the student, introducing them to the functioning and organization of the company or institution, and organizing and supervising the assigned tasks. They will also provide complementary training and the necessary material resources.
- **An academic supervisor**, a member of the master¿s teaching staff, who will carry out the academic monitoring from the university, including periodic meetings and the evaluation of the student's progress.

During the internship period, the student must:

- Join the entity's work team.
- Participate in solving real problems or in the development of an individual project.
- Submit interim reports according to the schedule agreed upon with the academic supervisor.
- Prepare a final internship report that provides a structured summary of the work carried out, the knowledge acquired, and the skills developed.

This methodology combines active learning, critical reflection, and tutorial guidance, promoting autonomy and the gradual integration into professional environments.

EVALUATION

The evaluation of the external internship will be based on the following criteria:

Assessment by the company supervisor (40% ¿ not recoverable in the second examination session)

The evaluation provided by the company or institution's supervisor will consider aspects such as:

- Level of responsibility and autonomy
- Degree of completion of assigned tasks
- Ability to integrate into the work team
- Initiative, punctuality, interest, and professional attitude
- Application of mathematical knowledge to the professional environment

Assessment by the academic supervisor (60% ¿ recoverable in the second examination session)

The academic supervisor will assess the final internship report, which must include:

- Description of the activities carried out
- Reflection on the knowledge applied and acquired
- Critical evaluation of the professional experience
- Suggestions for improvement

Requirements to pass the course:

- Submission of the final report within the established deadlines is mandatory.
- Attendance at the complementary activities proposed during the academic year, related to the internship or job placement, is required.
- A minimum score of 50% in the company supervisor¿s assessment is required to pass.

REFERENCES

- Referència b1: Guía de prácticas del estudiante de Matemáticas