

SYLLABUS

1. Information regarding the programme

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|-------------------------------------|---------------------------------------|
| 1.1 Higher education institution | „Babeş-Bolyai” University Cluj-Napoca |
| 1.2 Faculty | Mathematics and Computer Science |
| 1.3 Department | Mathematics |
| 1.4 Field of study | Mathematics |
| 1.5 Study cycle | Master |
| 1.6 Study programme / Qualification | Advanced Mathematics |

2. Information regarding the discipline

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|--------------------------------------|--|--------------|---|-------------------------|---|------------------------|------------|
| 2.1 Name of the discipline (en) (ro) | Speciality Practice (Practica de specialitate) | | | | | | |
| 2.2 Course coordinator | Conf. Univ. dr. Teodora Căţinaş | | | | | | |
| 2.3 Seminar coordinator | Conf. Univ. dr. Teodora Căţinaş | | | | | | |
| 2.4. Year of study | 2 | 2.5 Semester | 4 | 2.6. Type of evaluation | C | 2.7 Type of discipline | Compulsory |
| 2.8 Code of the discipline | MME7002 | | | | | | |

3. Total estimated time (hours/semester of didactic activities)

| | | | | | |
|---|-----|----------------------|---|------------------------|-------|
| 3.1 Hours per week | 1 | Of which: 3.2 course | 0 | 3.3 seminar/laboratory | 1 |
| 3.4 Total hours in the curriculum | 12 | Of which: 3.5 course | 0 | 3.6 seminar/laboratory | 12 |
| Time allotment: | | | | | hours |
| Learning using manual, course support, bibliography, course notes | | | | | 20 |
| Additional documentation (in libraries, on electronic platforms, field documentation) | | | | | 30 |
| Preparation for seminars/labs, homework, papers, portfolios and essays | | | | | 20 |
| Tutorship | | | | | 15 |
| Evaluations | | | | | 3 |
| Other activities: | | | | | |
| 3.7 Total individual study hours | 88 | | | | |
| 3.8 Total hours per semester | 100 | | | | |
| 3.9 Number of ECTS credits | 4 | | | | |

4. Prerequisites (if necessary)

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|-------------------|---|
| 4.1. curriculum | • |
| 4.2. competencies | • |

5. Conditions (if necessary)

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| 5.1. for the course | • |
| 5.2. for the seminar /lab activities | • |

6. Specific competencies acquired

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|----------------------------------|--|
| Professional competencies | <ul style="list-style-type: none"> • C1.1: Identifications of notions, descriptions of theories and use of the specific language • C5.3: Construction and development of logic proofs for some mathematical results, with identification of hypothesis and conclusions |
| Transversal competencies | <ul style="list-style-type: none"> • CT1 Application of efficient and organized work rules, of responsible attitudes towards the didactic-scientific domain, to creatively value one's own potential, with the respect towards the principles and norms of professional etc. • CT2 Efficient progress of group activities and development of communications skills and collaboration • CT3 Use of efficient methods and techniques to learn, inform, research and develop the abilities to value the knowledge, to adapt to requirements of a dynamic society and to communicate in Romanian language and in a language of international circulation. |

7. Objectives of the discipline (outcome of the acquired competencies)

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| 7.1 General objective of the discipline | <ul style="list-style-type: none"> • Abilities of applying teoretical knowledge gained during the studies. • Gaining abilities to execute a product/program in teams, writing project documentation, under the supervision of a specialize internship tutor and academic staff. <p>This internship project is associated to the research project:</p> <ul style="list-style-type: none"> - the research project is the scientific and experimental documentation - the internship report is the project documentation |
| 7.2 Specific objective of the discipline | <ul style="list-style-type: none"> • Ability of application of some mathematical concepts • Ability of oral and writing comunication of ideas and mathematical concepts • Ability of solving specific problems from algebra, mathematical analysis, geometry, computer science • Execute a product/program in teamwork • Write necessary documentations • Public project presentation |

8. Content

| | | |
|--------------------------|------------------|---------|
| 8.1 Course | Teaching methods | Remarks |
| Bibliography | | |
| 8.2 Seminar / laboratory | Teaching methods | Remarks |

| | | |
|---|--|--|
| 1. Accustom with the institution where the student is accepted for internship (schools, libraries, banks, companies, etc.) Documentation regarding the specific activities/rules of the institution/company. | Exposure, description, explanation | |
| 2. Theme presentation (problem statement) to be solved and establish team roles. | Dialog lecture, discussions, team debate | |
| 3. Establish the project objectives and deadlines. | Exposure, description, explanation | |
| 4. Implementation and accomplishment of projects; cooperation within projects. | Dialog lecture, discussions, team debate | |
| 5. Project analysis: entities and relations identification. | Dialog lecture, discussions, team debate | |
| 6. Development of the detailed specifications of the project. Development of practical applications of theoretical models. | Dialog lecture, discussions, team debate | |
| 7. Implementation of a required product based on some given documentation. | Dialog lecture, discussions, team debate | |
| 8. Gaining abilities to execute a product/program in teams under the supervision of a specialize internship tutor and academic staff. | Dialog lecture, discussions, team debate | |
| 9. Study of some problems and analysis of different ways of solving them. | Dialog lecture, discussions, team debate | |
| 10. Applications of knowledges of teaching and didactical methods specific to the specialization. | Dialog lecture, discussions, team debate | |
| 11. Presentation of the realized documentations for development stages. | Dialog lecture, discussions, team debate | |
| 12. Project presentation and defense in front of the evaluators | Evaluation | |

Bibliography

- [1] D. ANDRICA, D. I. DUCA, I. PURDEA, I. POP: Matematica de bază, Editura Studium, Cluj-Napoca, 2005.
- [2] D. M. BĂTINEȚU, I. V. MAFTEI, I.M. STANCU-MINASIAN: Exerciții și probleme de analiză matematică pentru clasele a XI-a și a XII-a, Editura Didactică și Pedagogică, București, 1981.
- [3] Ș. COBZAȘ: Analiză matematică (Calcul diferențial), Presa Universitară Clujeană, Cluj-Napoca, 1997.
- [4] D. I. DUCA, E. DUCA: Exerciții și probleme de analiză matematică (vol. 1 și 2), Casa Cărții de Știință, Cluj-Napoca, 2009.
- [5] M. MEGAN, A. L. SASU, M. NEAMȚU și A. CRĂCIUNESCU: Bazele analizei matematice prin exerciții și probleme, Editura Helicon, Timișoara, 1996

[6] C. NĂSTĂSESCU, C. NIȚĂ, M. BRANDIBURU, D. JOIȚA: Exerciții și probleme de algebră pentru clasele IX – XII, Editura Didactică și Pedagogică București.

9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

- The course respects the IEEE and ACM Curricula Recommendations;
- The course offers an overall perspective of Mathematics, and a general expertise for the student;
- The course offers basic knowledge about teamwork and integration in work market.

10. Evaluation

| Type of activity | 10.1 Evaluation criteria | 10.2 Evaluation methods | 10.3 Share in the grade (%) |
|--|--------------------------|---|-----------------------------|
| 10.4 Course | | | |
| 10.5 Seminar/lab activities | | The institution tutor assesses the performance of the interns. | 80% |
| | | The faculty mentor assesses the activities (based on Activity Report) | 20% |
| 10.6 Minimum performance standards | | | |
| At least grade 5 (from a scale of 1 to 10) | | | |

Date

19.04.2024

Signature of course coordinator

Conf. Dr. Teodora Căținaș

Signature of seminar coordinator

Conf. Dr. Teodora Căținaș

Date of approval

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Signature of the head of department

Prof. Dr. Andrei Mărcuș