

| | | |
|----|--|-----------------------------------|
| 1. | Field of study | Mathematics |
| 2. | Faculty | Faculty of Science and Technology |
| 3. | Academic year of entry | 2020/2021 (winter term) |
| 4. | Level of qualifications/degree | second-cycle studies |
| 5. | Degree profile | general academic |
| 6. | Mode of study | part-time |
| 7. | Academic year for which the revised course structure applies | 2020/2021 |

Specialization: Mathematical Methods in Computer Science

| Grupa treści kierunkowych | | | | | | | | | | year 1 | | | | | | year 2 | | | | | |
|---|------------------------|-------|-----|------------------|-----------|------------|------------|------------|-----------|-----------|------------|-----------|-----------|------------|----------|----------|------------|----------|----------|--|--|
| No. | Module | Lang. | E/C | form of teaching | | | Total ECTS | semester 1 | | | semester 2 | | | semester 3 | | | semester 4 | | | | |
| | | | | Total | L | O | | L | O | E | L | O | E | L | O | E | L | O | E | | |
| 1 | Algebra and Geometry | PL | E | 45 | 15 | 30 | 6 | 15 | 30 | 6 | | | | | | | | | | | |
| 2 | Complex Analysis | PL | E | 45 | 15 | 30 | 6 | 15 | 30 | 6 | | | | | | | | | | | |
| 3 | Differential Equations | PL | E | 45 | 15 | 30 | 6 | | | | 15 | 30 | 6 | | | | | | | | |
| 4 | Functional Analysis | PL | E | 45 | 15 | 30 | 6 | | | | 15 | 30 | 6 | | | | | | | | |
| TOTAL Grupa treści kierunkowych: | | | | 180 | 60 | 120 | 24 | 30 | 60 | 12 | 30 | 60 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | | |

| Grupa treści specjalnościowych | | | | | | | | | | year 1 | | | | | | year 2 | | | | | |
|--|---|-------|-----|------------------|------------|------------|------------|------------|-----------|-----------|------------|-----------|-----------|------------|------------|-----------|------------|------------|-----------|--|--|
| No. | Module | Lang. | E/C | form of teaching | | | Total ECTS | semester 1 | | | semester 2 | | | semester 3 | | | semester 4 | | | | |
| | | | | Total | L | O | | L | O | E | L | O | E | L | O | E | L | O | E | | |
| 1 | Algorithms and data structures | PL | E | 45 | 15 | 30 | 5 | 15 | 30 | 5 | | | | | | | | | | | |
| 2 | Computational Mathematics | PL | Z | 30 | 15 | 15 | 3 | 15 | 15 | 3 | | | | | | | | | | | |
| 3 | Operating systems with elements of computer architecture | PL | Z | 30 | 15 | 15 | 3 | 15 | 15 | 3 | | | | | | | | | | | |
| 4 | Specialized Module | PL | E | 150 | 75 | 75 | 30 | 15 | 15 | 6 | 15 | 15 | 6 | 15 | 15 | 6 | 30 | 30 | 12 | | |
| 5 | Advanced Programming | PL | E | 45 | 15 | 30 | 6 | | | | 15 | 30 | 6 | | | | | | | | |
| 6 | Database systems | PL | E | 30 | 15 | 15 | 4 | | | | 15 | 15 | 4 | | | | | | | | |
| 7 | Robotics - laboratory | PL | Z | 15 | | 15 | 2 | | | | 15 | 2 | | | | | | | | | |
| 8 | Graduate Seminar I | PL | Z | 30 | | 30 | 2 | | | | | | | 30 | 2 | | | | | | |
| 9 | Mathematical modelling and computer simulation | PL | E | 30 | 15 | 15 | 6 | | | | | | | 15 | 15 | 6 | | | | | |
| 10 | Monograph Course | PL | E | 30 | 15 | 15 | 6 | | | | | | | 15 | 15 | 6 | | | | | |
| 11 | Monograph Course in English | EN | E | 30 | 15 | 15 | 6 | | | | | | | 15 | 15 | 6 | | | | | |
| 12 | Workshops on mathematical modelling and computer simulation | PL | Z | 15 | | 15 | 2 | | | | | | | 15 | 2 | | | | | | |
| 13 | Graduate Seminar II | PL | Z | 30 | | 30 | 2 | | | | | | | | | | | 30 | 2 | | |
| 14 | Graduate Workshop | PL | Z | 45 | | 45 | 10 | | | | | | | | | | | 45 | 10 | | |
| 15 | Team Project | PL | Z | 15 | | 15 | 3 | | | | | | | | | | | 15 | 3 | | |
| TOTAL Grupa treści specjalnościowych: | | | | 570 | 195 | 375 | 90 | 60 | 75 | 17 | 45 | 75 | 18 | 60 | 105 | 28 | 30 | 120 | 27 | | |

| Inne wymagania | | | | | | | | | | year 1 | | | | | | year 2 | | | | | |
|------------------------------|--|-------|-----|------------|------------|------------|------------|------------|-----------|------------------|-----------|------------|------------|------------|-----------|-----------|------------|-----------|-----------|------------|--|
| | | | | | | | | | | form of teaching | | | Total ECTS | semester 1 | | | semester 2 | | | semester 3 | |
| No. | Module | Lang. | E/C | Total | L | O | E | L | O | E | L | O | | E | L | O | E | L | O | E | |
| 1 | Entrepreneurship, Intellectual Property Protection | PL | Z | 15 | 15 | | 1 | 15 | | 1 | | | | | | | | | | | |
| 2 | General Academic Module in the Field of Humanities | PL | Z | 20 | 20 | | 2 | | | | | | | 20 | | 2 | | | | | |
| 3 | Module in the Field of Social Sciences | PL | Z | 30 | 30 | | 3 | | | | | | | | | | 30 | | 3 | | |
| TOTAL Inne wymagania: | | | | 65 | 65 | 0 | 6 | 15 | 0 | 1 | 0 | 0 | 0 | 20 | 0 | 2 | 30 | 0 | 3 | | |
| TOTAL: | | | | 815 | 320 | 495 | 120 | 240 | 30 | 210 | 30 | 185 | 30 | 180 | 30 | 30 | 180 | 30 | 30 | | |
| TOTAL | | | | | | | | | | 815 | | | | | | | | | | | |

The study ends with the awarding of a Master's Degree in the field of Mathematics: Mathematical Methods in Computer Science.

Legend

Each semester consists of 15 weeks

E/C - examination/course work

E - ECTS

L - lecture, O - all forms of teaching excluding lecture (practical classes, laboratory classes, discussion classes, seminar, proseminar, language classes, field practice, workshop, internship, tutoring)

| | | |
|----|--|-----------------------------------|
| 1. | Field of study | Mathematics |
| 2. | Faculty | Faculty of Science and Technology |
| 3. | Academic year of entry | 2020/2021 (winter term) |
| 4. | Level of qualifications/degree | second-cycle studies |
| 5. | Degree profile | general academic |
| 6. | Mode of study | part-time |
| 7. | Academic year for which the revised course structure applies | 2020/2021 |

Specialization: Mathematics for Finance and Economics

| Grupa treści kierunkowych | | | | | | | | year 1 | | | | | | year 2 | | | | | |
|---|------------------------|-------|-----|------------------|-----------|------------|------------|------------|-----------|-----------|------------|-----------|-----------|------------|----------|----------|------------|----------|----------|
| | | | | | | | | semester 1 | | | semester 2 | | | semester 3 | | | semester 4 | | |
| No. | Module | Lang. | E/C | form of teaching | | | Total ECTS | L | O | E | L | O | E | L | O | E | L | O | E |
| 1 | Algebra and Geometry | PL | E | 45 | 15 | 30 | 6 | 15 | 30 | 6 | | | | | | | | | |
| 2 | Complex Analysis | PL | E | 45 | 15 | 30 | 6 | 15 | 30 | 6 | | | | | | | | | |
| 3 | Differential Equations | PL | E | 45 | 15 | 30 | 6 | | | | 15 | 30 | 6 | | | | | | |
| 4 | Functional Analysis | PL | E | 45 | 15 | 30 | 6 | | | | 15 | 30 | 6 | | | | | | |
| TOTAL Grupa treści kierunkowych: | | | | 180 | 60 | 120 | 24 | 30 | 60 | 12 | 30 | 60 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |

| Grupa treści specjalnościowych | | | | | | | | year 1 | | | | | | year 2 | | | | | |
|--|--|-------|-----|------------------|------------|------------|------------|------------|-----------|-----------|------------|-----------|-----------|------------|------------|-----------|------------|------------|-----------|
| | | | | | | | | semester 1 | | | semester 2 | | | semester 3 | | | semester 4 | | |
| No. | Module | Lang. | E/C | form of teaching | | | Total ECTS | L | O | E | L | O | E | L | O | E | L | O | E |
| 1 | Computational Mathematics | PL | Z | 30 | 15 | 15 | 3 | 15 | 15 | 3 | | | | | | | | | |
| 2 | Mathematical Foundations of Computer Science | PL | Z | 30 | 15 | 15 | 2 | 15 | 15 | 2 | | | | | | | | | |
| 3 | Stochastic Methods | PL | E | 30 | 15 | 15 | 6 | 15 | 15 | 6 | | | | | | | | | |
| 4 | Specialized Module | PL | E | 210 | 105 | 105 | 42 | 15 | 15 | 6 | 30 | 30 | 12 | 30 | 30 | 12 | 30 | 30 | 12 |
| 5 | Statistics | PL | E | 30 | 15 | 15 | 6 | | | | 15 | 15 | 6 | | | | | | |
| 6 | Graduate Seminar I | PL | Z | 30 | | 30 | 2 | | | | | | | 30 | 2 | | | | |
| 7 | Monograph Course | PL | E | 30 | 15 | 15 | 6 | | | | | | | 15 | 15 | 6 | | | |
| 8 | Monograph Course in English | EN | E | 30 | 15 | 15 | 6 | | | | | | | 15 | 15 | 6 | | | |
| 9 | Problem Workshops | PL | E | 15 | | 15 | 2 | | | | | | | 15 | 2 | | | | |
| 10 | Graduate Seminar II | PL | Z | 30 | | 30 | 2 | | | | | | | | | | 30 | 2 | |
| 11 | Graduate Workshop | PL | Z | 45 | | 45 | 10 | | | | | | | | | | 45 | 10 | |
| 12 | Team Project | PL | Z | 15 | | 15 | 3 | | | | | | | | | | 15 | 3 | |
| TOTAL Grupa treści specjalnościowych: | | | | 525 | 195 | 330 | 90 | 60 | 60 | 17 | 45 | 45 | 18 | 60 | 105 | 28 | 30 | 120 | 27 |

| Inne wymagania | | | | | | | | year 1 | | | | | | year 2 | | | | | |
|----------------|--|-------|-----|------------------|----|--|------------|------------|---|---|------------|---|---|------------|---|---|------------|---|---|
| | | | | | | | | semester 1 | | | semester 2 | | | semester 3 | | | semester 4 | | |
| No. | Module | Lang. | E/C | form of teaching | | | Total ECTS | L | O | E | L | O | E | L | O | E | L | O | E |
| 1 | Entrepreneurship, Intellectual Property Protection | PL | Z | 15 | 15 | | 1 | 15 | | 1 | | | | | | | | | |
| 2 | General Academic Module in the Field of Humanities | PL | Z | 20 | 20 | | 2 | | | | | | | 20 | | 2 | | | |
| 3 | Module in the Field of Social Sciences | PL | Z | 30 | 30 | | 3 | | | | | | | | | | 30 | | 3 |

| Inne wymagania | | | | | | | | | | year 1 | | | | | | year 2 | | | | | | | |
|------------------------------|--------|--|--|--|--|-------|-----|-------|-----|------------------|------------|-----|------------|------------|----|--------|------------|-----|----|------------|---|----|------------|
| | | | | | | | | | | form of teaching | | | Total ECTS | semester 1 | | | semester 2 | | | semester 3 | | | semester 4 |
| No. | Module | | | | | Lang. | E/C | Total | L | O | Total ECTS | L | | O | E | L | O | E | L | O | E | L | O |
| TOTAL Inne wymagania: | | | | | | | | 65 | 65 | 0 | | 6 | 15 | 0 | 1 | 0 | 0 | 0 | 20 | 0 | 2 | 30 | 0 |
| TOTAL: | | | | | | | | 770 | 320 | 450 | 120 | 225 | 30 | 180 | 30 | 185 | 30 | 180 | 30 | | | | |
| TOTAL | | | | | | | | | | 770 | | | | | | | | | | | | | |

The study ends with the awarding of a Master's Degree in the field of Mathematics: Mathematics for Finance and Economics.

Legend

Each semester consists of 15 weeks

E/C - examination/course work

E - ECTS

L - lecture, O - all forms of teaching excluding lecture (practical classes, laboratory classes, discussion classes, seminar, proseminar, language classes, field practice, workshop, internship, tutoring)

| | | |
|----|--|-----------------------------------|
| 1. | Field of study | Mathematics |
| 2. | Faculty | Faculty of Science and Technology |
| 3. | Academic year of entry | 2020/2021 (winter term) |
| 4. | Level of qualifications/degree | second-cycle studies |
| 5. | Degree profile | general academic |
| 6. | Mode of study | part-time |
| 7. | Academic year for which the revised course structure applies | 2020/2021 |

Specialization: Teaching Specialty - Teaching of Mathematics

| Grupa treści kierunkowych | | | | | | | | | | year 1 | | | | | | year 2 | | | | | |
|---|------------------------|-------|-----|------------------|-----------|------------|------------|------------|-----------|-----------|------------|-----------|-----------|------------|----------|----------|------------|----------|----------|--|--|
| No. | Module | Lang. | E/C | form of teaching | | | Total ECTS | semester 1 | | | semester 2 | | | semester 3 | | | semester 4 | | | | |
| | | | | Total | L | O | | L | O | E | L | O | E | L | O | E | L | O | E | | |
| 1 | Algebra and Geometry | PL | E | 45 | 15 | 30 | 6 | 15 | 30 | 6 | | | | | | | | | | | |
| 2 | Complex Analysis | PL | E | 45 | 15 | 30 | 6 | 15 | 30 | 6 | | | | | | | | | | | |
| 3 | Differential Equations | PL | E | 45 | 15 | 30 | 6 | | | | 15 | 30 | 6 | | | | | | | | |
| 4 | Functional Analysis | PL | E | 45 | 15 | 30 | 6 | | | | 15 | 30 | 6 | | | | | | | | |
| TOTAL Grupa treści kierunkowych: | | | | 180 | 60 | 120 | 24 | 30 | 60 | 12 | 30 | 60 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | | |

| Grupa treści specjalnościowych | | | | | | | | | | year 1 | | | | | | year 2 | | | | | |
|--------------------------------|---|-------|-----|------------------|----|----|------------|------------|----|--------|------------|---|---|------------|----|--------|------------|---|---|--|--|
| No. | Module | Lang. | E/C | form of teaching | | | Total ECTS | semester 1 | | | semester 2 | | | semester 3 | | | semester 4 | | | | |
| | | | | Total | L | O | | L | O | E | L | O | E | L | O | E | L | O | E | | |
| 1 | Education | PL | Z | 15 | | 15 | 1 | | 15 | 1 | | | | | | | | | | | |
| 2 | Education Practicum from Mathematics I | PL | Z | 45 | | 45 | 4 | | 45 | 4 | | | | | | | | | | | |
| 3 | Factual aspects of teaching mathematics I | PL | Z | 30 | | 30 | 3 | | 30 | 3 | | | | | | | | | | | |
| 4 | Fundamentals of Didactics | PL | Z | 15 | 15 | | 1 | 15 | | 1 | | | | | | | | | | | |
| 5 | Mathematical education in secondary school - ISCED level 3 | PL | Z | 45 | | 45 | 4 | | 45 | 4 | | | | | | | | | | | |
| 6 | Psychological and Pedagogical Practices | PL | Z | 15 | | 15 | 1 | | 15 | 1 | | | | | | | | | | | |
| 7 | Psychological and Pedagogical Workshops - Post-Primary School | PL | Z | 15 | | 15 | 1 | | 15 | 1 | | | | | | | | | | | |
| 8 | Psychology | PL | Z | 15 | | 15 | 1 | | 15 | 1 | | | | | | | | | | | |
| 9 | Vocal Pedagogy | PL | Z | 15 | 15 | | 1 | 15 | | 1 | | | | | | | | | | | |
| 10 | Basics of Educational Diagnosis for Teachers | PL | Z | 30 | | 30 | 2 | | | | 30 | 2 | | | | | | | | | |
| 11 | Didactics of Mathematics I | PL | Z | 30 | | 30 | 2 | | | | 30 | 2 | | | | | | | | | |
| 12 | Education Practicum from Mathematics II | PL | Z | 45 | | 45 | 4 | | | | 45 | 4 | | | | | | | | | |
| 13 | Factual aspects of teaching mathematics II | PL | Z | 30 | | 30 | 3 | | | | 30 | 3 | | | | | | | | | |
| 14 | First Aid | PL | Z | 5 | | 5 | 1 | | | | 5 | 1 | | | | | | | | | |
| 15 | Mathematical Competition Tasks | PL | Z | 30 | | 30 | 3 | | | | 30 | 3 | | | | | | | | | |
| 16 | Methodology of problem solving (matura exam) I | PL | Z | 30 | | 30 | 3 | | | | 30 | 3 | | | | | | | | | |
| 17 | Didactics of Mathematics II | PL | Z | 30 | | 30 | 2 | | | | | | | 30 | 2 | | | | | | |
| 18 | Graduate Seminar I | PL | Z | 30 | | 30 | 2 | | | | | | | 30 | 2 | | | | | | |
| 19 | Information and education technology and IT for teachers | PL | Z | 30 | | 30 | 2 | | | | | | | 30 | 2 | | | | | | |
| 20 | Methodology of problem solving (matura exam) II | PL | Z | 30 | | 30 | 3 | | | | | | | 30 | 3 | | | | | | |
| 21 | Monograph Course | PL | E | 30 | 15 | 15 | 6 | | | | | | | 15 | 15 | 6 | | | | | |

| Grupa treści specjalnościowych | | | | | | | | | | year 1 | | | | | | year 2 | | | | | |
|--|--|-------|-----|------------------|------------|------------|------------|------------|------------|------------|------------|------------|-----------|------------|------------|-------------|------------|------------|-----------|--|--|
| No. | Module | Lang. | E/C | form of teaching | | | Total ECTS | semester 1 | | | semester 2 | | | semester 3 | | | semester 4 | | | | |
| | | | | Total | L | O | | L | O | E | L | O | E | L | O | E | L | O | E | | |
| 22 | Monograph Course in English | EN | E | 30 | 15 | 15 | 6 | | | | | | | 15 | 15 | 6 | | | | | |
| 23 | Specialized Module | PL | E | 90 | 45 | 45 | 18 | | | | | | | 15 | 15 | 6 | 30 | 30 | 12 | | |
| 24 | Didactics of Mathematics III | PL | Z | 30 | 15 | 15 | 3 | | | | | | | | | | 15 | 15 | 3 | | |
| 25 | Graduate Seminar II | PL | Z | 30 | | 30 | 2 | | | | | | | | | | | 30 | 2 | | |
| 26 | Graduate Workshop | PL | Z | 45 | | 45 | 10 | | | | | | | | | | | 45 | 10 | | |
| TOTAL Grupa treści specjalnościowych: | | | | 785 | 120 | 665 | 89 | 30 | 180 | 17 | 0 | 200 | 18 | 45 | 165 | 27 | 45 | 120 | 27 | | |
| Inne wymagania | | | | | | | | | | year 1 | | | | | | year 2 | | | | | |
| No. | Module | Lang. | E/C | form of teaching | | | Total ECTS | semester 1 | | | semester 2 | | | semester 3 | | | semester 4 | | | | |
| | | | | Total | L | O | | L | O | E | L | O | E | L | O | E | L | O | E | | |
| 1 | Entrepreneurship, Intellectual Property Protection | PL | Z | 15 | 15 | | 1 | 15 | | 1 | | | | | | | | | | | |
| 2 | General Academic Module in the Field of Humanities | PL | Z | 20 | 20 | | 2 | | | | | | 20 | | 2 | | | | | | |
| 3 | Module in the Field of Social Sciences | PL | Z | 30 | 30 | | 3 | | | | | | | | | | 30 | | 3 | | |
| TOTAL Inne wymagania: | | | | 65 | 65 | 0 | 6 | 15 | 0 | 1 | 0 | 0 | 0 | 20 | 0 | 2 | 30 | 0 | 3 | | |
| Praktyka | | | | | | | | | | year 1 | | | | | | year 2 | | | | | |
| No. | Module | Lang. | E/C | form of teaching | | | Total ECTS | semester 1 | | | semester 2 | | | semester 3 | | | semester 4 | | | | |
| | | | | Total | L | O | | L | O | E | L | O | E | L | O | E | L | O | E | | |
| 1 | Continuous Didactic Practicum in Mathematics | PL | Z | 30 | | 30 | 1 | | | | | | | | 30 | 1 | | | | | |
| TOTAL Praktyka: | | | | 30 | 0 | 30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 1 | 0 | 0 | 0 | | |
| TOTAL: | | | | 1060 | 245 | 815 | 120 | 315 | 30 | 290 | 30 | 260 | 30 | 195 | 30 | 1060 | | | | | |

The study ends with the awarding of a Master's Degree in the field of Mathematics: Teaching Specialty - Teaching of Mathematics.

Legend

Each semester consists of 15 weeks

E/C - examination/course work

E - ECTS

L - lecture, O - all forms of teaching excluding lecture (practical classes, laboratory classes, discussion classes, seminar, proseminar, language classes, field practice, workshop, internship, tutoring)