

## Subject card

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| Subject name and code                       | Developing Mathematically Gifted Students, PG_00207043                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                          |                                                                                                                                                                                                                                  |                                     |                                                                                                    |            |     |
| Field of study                              | Mathematics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                          |                                                                                                                                                                                                                                  |                                     |                                                                                                    |            |     |
| Date of commencement of studies             | October 2026                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                          | Academic year of realisation of subject                                                                                                                                                                                          |                                     | 2026/2027                                                                                          |            |     |
| Education level                             | Master's studies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                          | Subject group                                                                                                                                                                                                                    |                                     | Obligatory subject group in the field of study<br>Optional subject group                           |            |     |
| Mode of study                               | full-time studies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                          | Mode of delivery                                                                                                                                                                                                                 |                                     | at the university                                                                                  |            |     |
| Year of study                               | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                          | Language of instruction                                                                                                                                                                                                          |                                     | Polish                                                                                             |            |     |
| Semester of study                           | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                          | ECTS credits                                                                                                                                                                                                                     |                                     | 2.0                                                                                                |            |     |
| Learning profile                            | academic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                          | Assessment form                                                                                                                                                                                                                  |                                     | credit                                                                                             |            |     |
| Conducting unit                             | Division of Didactics of Mathematics -> Institute of Mathematics -> Faculty of Mathematics, Physics and Informatics -> Rector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                          |                                                                                                                                                                                                                                  |                                     |                                                                                                    |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                          | dr Elżbieta Mrożek                                                                                                                                                                                                               |                                     |                                                                                                    |            |     |
|                                             | Teachers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                          |                                                                                                                                                                                                                                  |                                     |                                                                                                    |            |     |
| Lesson types                                | Lesson type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Lecture                                                  | Tutorial                                                                                                                                                                                                                         | Laboratory                          | Project                                                                                            | Seminar    | SUM |
|                                             | Number of study hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 30.0                                                     | 0.0                                                                                                                                                                                                                              | 0.0                                 | 0.0                                                                                                | 0.0        | 30  |
|                                             | E-learning hours included: 0.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                          |                                                                                                                                                                                                                                  |                                     |                                                                                                    |            |     |
| Learning activity and number of study hours | Learning activity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Participation in didactic classes included in study plan |                                                                                                                                                                                                                                  | Participation in consultation hours |                                                                                                    | Self-study | SUM |
|                                             | Number of study hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 30                                                       |                                                                                                                                                                                                                                  | 2.0                                 |                                                                                                    | 18.0       | 50  |
| Subject objectives                          | The aim of the classes is to familiarize students of the teaching section with the issues of working with students gifted in mathematics.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                          |                                                                                                                                                                                                                                  |                                     |                                                                                                    |            |     |
| Learning outcomes                           | Course outcome                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                          | Subject outcome                                                                                                                                                                                                                  |                                     | Method of verification                                                                             |            |     |
|                                             | [MATMU2_K04] is ready to take care of the achievements and traditions of professions related to analytical modeling and data analysis by thinking and acting in an entrepreneurial manner, improving his/her competences and popularizing knowledge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                          | The student deepens and develops his or her competences by analyzing the tasks facing a mathematics teacher when working with students gifted in mathematics and selecting methods and techniques enabling their implementation. |                                     | [SK2] presentation/project/paper/report<br>[SK8] observation of student's independent or team work |            |     |
| Subject contents                            | Characteristics of a gifted student, and especially a student gifted in mathematics - problems of diagnosing mathematical abilities in students at different educational levels. Individual differences between students gifted in mathematics (levels of talent, type of interests, level of motivation to overcome difficulties, social problems in relationships with peers). Forms of work with gifted students during lessons, during extracurricular activities and outside of school. Individual work with a student exceptionally gifted in mathematics, with particular emphasis on research projects. Planning math circles at different educational levels, taking into account different types of students' interests (solving tasks and logical puzzles, games, reports expanding school material or concerning issues on the border of different fields). Planning preparation of students for various mathematical competitions or competitions with elements of mathematics. Organizing various forms of competition - individual and team. Solving more difficult, less typical tasks from different educational stages. Analysis of mathematical tasks in terms of different abilities and needs of the student. Laying out tasks. Methodology for solving tasks of increased difficulty. |                                                          |                                                                                                                                                                                                                                  |                                     |                                                                                                    |            |     |
| Prerequisites and co-requisites             | Students choosing this course should have knowledge of mathematics didactics and practical skills in teaching mathematics - within the scope of classes preceding this subject in the teacher education program.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                          |                                                                                                                                                                                                                                  |                                     |                                                                                                    |            |     |

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| Assessment methods and criteria                                | Subject passing criteria              | Passing threshold                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Percentage of the final grade |
|                                                                | observation of the student's attitude | 51.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.0%                          |
|                                                                | test                                  | 51.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 70.0%                         |
|                                                                | activity                              | 51.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 30.0%                         |
| Recommended reading                                            | Basic literature                      | W.Limont, A gifted student. How to recognize him and how to work with him, Gdańskie Wydawnictwo Psychologiczne, Sopot 2005.<br>M.Mikołajczyk (ed.), How to work with a gifted student? Mathematics teacher's guide, Ośrodek Rozwoju Edukacji, Warsaw 2012. Articles from magazines for mathematics teachers (Mathematics, Mathematics in School, "Teachers Mathematics plus Information Technology", "Mathematics Teaching", "Mathematics in school" and others) Popular science books for primary and high school students. Collections of problems from mathematical competitions and olympiads. Competition websites: Mathematical Kangaroo, Junior Mathematical Olympiad, Mathematical Olympiad and others. Websites: Center for Education Development ( <a href="http://www.ore.pl">www.ore.pl</a> ), Association for Education ( <a href="http://www.sem.pl">www.sem.pl</a> ), Mathematical Association of America ( <a href="http://www.maa.org">www.maa.org</a> ) and others. |                               |
|                                                                | Supplementary literature              | G.Polya, How to solve it?, PWN Scientific Publishing House, Warsaw 1993.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                               |
|                                                                | eResources addresses                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                               |
| Example issues/<br>example questions/<br>tasks being completed | not applicable                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                               |
| Work placement                                                 | Not applicable                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                               |

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