

## Subject card

|                                             |                                                                                       |                                                          |                                         |                                     |                        |            |     |
|---------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------|-------------------------------------|------------------------|------------|-----|
| Subject name and code                       | Elementary connections between algebra, geometry and topology, PG_00170079            |                                                          |                                         |                                     |                        |            |     |
| Field of study                              | Mathematics                                                                           |                                                          |                                         |                                     |                        |            |     |
| Date of commencement of studies             | October 2024                                                                          |                                                          | Academic year of realisation of subject |                                     | 2024/2025              |            |     |
| Education level                             | Master's studies                                                                      |                                                          | Subject group                           |                                     | 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                            |                                     | 5.0                    |            |     |
| Learning profile                            | academic                                                                              |                                                          | Assessment form                         |                                     | credit                 |            |     |
| Conducting unit                             | Institute of Mathematics -> Faculty of Mathematics, Physics and Informatics -> Rector |                                                          |                                         |                                     |                        |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                    |                                                          | prof. dr hab. Andrzej Szczepański       |                                     |                        |            |     |
|                                             | Teachers                                                                              |                                                          | prof. dr hab. Andrzej Szczepański       |                                     |                        |            |     |
| Lesson types                                | Lesson type                                                                           | Lecture                                                  | Tutorial                                | Laboratory                          | Project                | Seminar    | SUM |
|                                             | Number of study hours                                                                 | 0.0                                                      | 0.0                                     | 0.0                                 | 0.0                    | 30.0       | 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                                                       |                                         | 5.0                                 |                        | 90.0       | 125 |
| Subject objectives                          | The goal is preparing students to write master thesis.                                |                                                          |                                         |                                     |                        |            |     |

| Learning outcomes               | Course outcome                                                                                                                                                                                                                                                                               | Subject outcome   | Method of verification                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------|
|                                 | [MATMU2_K05] is ready to independently search for information in literature, also in foreign languages                                                                                                                                                                                       | N/A               | [SK2] presentation/project/paper/report                 |
|                                 | [MATMU2_K01] is willing to acknowledge the limitations of his or her own knowledge and is willing to pursue further education                                                                                                                                                                | N/A               | [SK8] observation of student's independent or team work |
|                                 | [MATMU2_U03] can understand mathematical texts of various types from selected fields of mathematics                                                                                                                                                                                          | N/A               | [SU2] presentation/project/paper/report                 |
|                                 | [MATMU2_U04] is able, at an advanced level and including modern mathematics, to apply and present, orally and in writing, methods of at least one selected branch of mathematics                                                                                                             | N/A               | [SU2] presentation/project/paper/report                 |
|                                 | [MATMU2_W07] knows and understands the basic legal and ethical conditions related to scientific and teaching activities                                                                                                                                                                      | N/A               | [SW1] oral statement/conversation/discussion            |
|                                 | [MATMU2_U09] can prepare oral presentations in-depth in Polish and at least one foreign language, in a selected field of mathematics                                                                                                                                                         | N/A               | [SU2] presentation/project/paper/report                 |
|                                 | [MATMU2_K02] is ready to precisely formulate questions to deepen his/her understanding of a given topic or find missing elements of reasoning                                                                                                                                                | N/A               | [SK1] oral statement/conversation/discussion            |
|                                 | [MATMU2_W03] knows and understands in-depth a selected field of theoretical or applied mathematics and is able to understand the formulations of issues in this field that are still at the research stage and knows the connections of issues in this field with other areas of mathematics | N/A               | [SW2] presentation/project/paper/report                 |
|                                 | [MATMU2_U05] can perform proofs in a selected field and, if necessary, also use tools from other areas of mathematics                                                                                                                                                                        | N/A               | [SU2] presentation/project/paper/report                 |
|                                 | [MATMU2_K06] is ready to formulate opinions on basic mathematical issues                                                                                                                                                                                                                     | N/A               | [SK1] oral statement/conversation/discussion            |
|                                 | [MATMU2_K04] is ready to understand and appreciate the importance of intellectual honesty in one's own and other people's actions; ethical conduct                                                                                                                                           | N/A               | [SK8] observation of student's independent or team work |
|                                 | [MATMU2_U02] can express mathematical content in speech and writing, in mathematical texts of various nature                                                                                                                                                                                 | N/A               | [SU2] presentation/project/paper/report                 |
|                                 | [MATMU2_U07] is able to define his/her interests and develop them; in particular, is able to establish contact with specialists in his/her field, e.g. understand their lectures intended for young mathematicians                                                                           | N/A               | [SU1] oral statement/conversation/discussion            |
|                                 | [MATMU2_U08] is able to prepare in-depth written works in Polish and at least one foreign language in a selected field of mathematics                                                                                                                                                        | N/A               | [SU2] presentation/project/paper/report                 |
| Subject contents                | N/A                                                                                                                                                                                                                                                                                          |                   |                                                         |
| Prerequisites and co-requisites |                                                                                                                                                                                                                                                                                              |                   |                                                         |
| Assessment methods and criteria | Subject passing criteria                                                                                                                                                                                                                                                                     | Passing threshold | Percentage of the final grade                           |
|                                 | lecture                                                                                                                                                                                                                                                                                      | 50.0%             | 100.0%                                                  |
|                                 | n/a                                                                                                                                                                                                                                                                                          | 100.0%            | 0.0%                                                    |

|                                                                |                          |                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended reading                                            | Basic literature         | <ul style="list-style-type: none"> <li>• A. Białynicki-Birula: Zarys algebry, PWN, 1987</li> <li>• H. Weyl: Symetria, Prószyński i spółka, 1997 (lub PWN 1960)</li> <li>• M. Davis: The geometry and topology of Coxeter groups, Princeton University Press - 2008</li> </ul> |
|                                                                | Supplementary literature | Determined individually with students                                                                                                                                                                                                                                         |
|                                                                | eResources addresses     |                                                                                                                                                                                                                                                                               |
| Example issues/<br>example questions/<br>tasks being completed | n/a                      |                                                                                                                                                                                                                                                                               |
| Work placement                                                 | Not applicable           |                                                                                                                                                                                                                                                                               |

Document generated electronically. Does not require a seal or signature.