| Preparation for diploma examination       [10101021310110120975.         Fuld of atudy       Profile of study       Year./Semeatur         Civil Engineering Second-cycle Studies       Subject offendering       Subject offendering         Electre pathyspecially       Roads and Highways       Polish       Course (computery, ebblight)         Cycle of study:       Second-cycle studies, major, other)       full-time       Obligatory         Cycle of study program (Base, major, other)       full-time       No. of credits         Lecture:       Classes:       - Laboratory:       - Project/seminars:       1       7         Status of the course in the study program (Base, major, other)       (university-wide, from another field)       Intervestivy-wide         Education areas and fields of sciences and at       ECTS distribution (number and 30)       7       100%         Responsible for subject / lecturer:       Dr. Micczysław Słowik       7       100%       7       100%         Preequisites in terms of knowledge, skills and social competencies:       1       Knowledge       Knowledge gained from course implemented in the full-time second degree studies in Civil Engineering, specially Roads and Motorways.       1       1       Knowledge gained from course implemented in the full-time second degree studies in Civil Engineering, specially Roads and Motorways.       1       1       Knowledge according to the p                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Field of study       Civil Engineering Second-cycle Studies         Elective path/specialty       Roads and Highways         Cycle of study:       Fo         Second-cycle studies       Fo         No. of hours       Lecture:         Lecture:       Classes:       -         Status of the course in the study program (Basic, major, other)       other         Education areas and fields of science and art       technical sciences         Technical sciences       Technical sciences         Dr. Mieczysław Słowik       email: Mieczysław Słowik @put.poznan.pl         tel. +48 61 665 24 87       Faculty of Civil and Environmental Engineering         5, Piotrowo St., PL 60-965 Poznań       Prerequisites in terms of knowledge, skills and s         1       Knowledge       Knowledge gained from course impl         Engineering, specialty Roads and M       The skills learned during the second                                                                                                                                                                                                      | Profile of study<br>(general academic, practical)<br>general academic<br>Subject offered in:<br>Polish<br>rm of study (full-time,part-time)<br>full-t<br>Project/seminars:<br>(university-wide, from another file<br>unive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1010102131010120975         Year /Semester         2 / 3         Course (compulsory, elective)<br>obligatory         ime         No. of credits         1       7         eld)         trsity-wide         ECTS distribution (number<br>and %)         7       100%         7       100% |
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| Civil Engineering Second-cycle Studies         (general academic, practical)<br>general academic         2 / 3           Elective pathispecially<br>Roads and Highways         Subject offered in:<br>Polish         Course (compulsory, elective<br>poligatory           Cycle of study:         Second-cycle studies         Form of study (full-time part-time)           Second-cycle studies         full-time           No. of nours         Laboratory: - Project/seminars: 1         7           Status of the course in the study program (Basic, major, other)         (university-wide, from another field)         ECT 5 distribution (number<br>and 5%)           Technical sciences         7         100%         7         100%           Responsible for subject / lecturer:         Dr. Mieczysław Słowik<br>emait: Mieczysław Słowik         Form course implemented in the full-time second degree studies in Civil<br>Engineering, specially Roads and Motorways.           1         Knowledge         Knowledge, skills and social competencies:           2         Skills         The skills learned during the second degree course concerning design, construction and<br>maintenance or roads.           3         Social<br>competencies         Individual work on specific task.           Course to may the second degree course.         [-]           2         Skills         The skills learned during the<br>second degree course.           3         Social<br>competencies <td< th=""><th>Civil Engineering Second-cycle Studies         Elective path/specialty         Roads and Highways         Cycle of study:         Fo         Second-cycle studies         No. of hours         Lecture: - Classes: - Laboratory: -         Status of the course in the study program (Basic, major, other)         other         Education areas and fields of science and art         technical sciences         Technical sciences         Technical sciences         Dr. Mieczysław Słowik         email: Mieczysław Słowik @put.poznan.pl       tel. +48 61 665 24 87       Faculty of Civil and Environmental Engineering       5, Piotrowo St., PL 60-965 Poznań         Prerequisites in terms of knowledge, skills and s         1       Knowledge       Knowledge gained from course impl         Engineering, specialty Roads and M</th><th>(general academic, practical)<br/>general academic<br/>Subject offered in:<br/>Polish<br/>rm of study (full-time,part-time)<br/>full-t<br/>Project/seminars:<br/>(university-wide, from another fid<br/>unive<br/>social competencies:<br/>lemented in the full-time sec</th><th>2/3       Course (compulsory, elective)<br/>obligatory       ime       1     7       eld)       rrsity-wide       ECTS distribution (number<br/>and %)       7     100%       7     100%</th></td<>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Civil Engineering Second-cycle Studies         Elective path/specialty         Roads and Highways         Cycle of study:         Fo         Second-cycle studies         No. of hours         Lecture: - Classes: - Laboratory: -         Status of the course in the study program (Basic, major, other)         other         Education areas and fields of science and art         technical sciences         Technical sciences         Technical sciences         Dr. Mieczysław Słowik         email: Mieczysław Słowik @put.poznan.pl       tel. +48 61 665 24 87       Faculty of Civil and Environmental Engineering       5, Piotrowo St., PL 60-965 Poznań         Prerequisites in terms of knowledge, skills and s         1       Knowledge       Knowledge gained from course impl         Engineering, specialty Roads and M                                                                                                                                                                                                                                                                                | (general academic, practical)<br>general academic<br>Subject offered in:<br>Polish<br>rm of study (full-time,part-time)<br>full-t<br>Project/seminars:<br>(university-wide, from another fid<br>unive<br>social competencies:<br>lemented in the full-time sec                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2/3       Course (compulsory, elective)<br>obligatory       ime       1     7       eld)       rrsity-wide       ECTS distribution (number<br>and %)       7     100%       7     100%                                                                                                   |
| Elective pathspecially         Subject offered in:<br>Polish         Course (compulsory, elective<br>obligatory)           Cycle of study:         Form of study (ful-lime, part-time)         Image: Study of study (ful-lime, part-time)           No. of hours         Lecture: - Classes: - Laboratory: - Project/seminars: 1         No. of oredits           Status of the course in the study program (Base, major, other)         (university-wide, from another field)         Image: Study (ful-lime, part-time)           Education areas and fields of science and at         ECTS distribution (number<br>and %)         Consertsty-wide           Education areas and fields of sciences         7         100%         7           Technical sciences         7         100%         7         100%           Responsible for subject / lecturer:         Dr. Micczyskaw Slowik @put.poznan.pl<br>tei.+48 61 665 24 87         7         100%         7         100%           Prerequisites in terms of knowledge, skills and social competencies:         Imainterance of roads.         Imainterance of roads.         Imainterance of roads.           3         Social<br>competencies         Individual work on specific task.         Imainterance of roads.         Imainterance of roads.           3. Social<br>competencies         Individual work on specific task.         Imainterance of roads.         Imainterance of roads.         Imainterance of roads.         Imainterance of roads.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Roads and Highways         Cycle of study:       Fo         Second-cycle studies         No. of hours       Lecture:       -       Classes:       -       Laboratory:       -         Lecture:       -       Classes:       -       Laboratory:       -         Status of the course in the study program (Basic, major, other)         other         Education areas and fields of science and art         technical sciences         Technical sciences         Technical sciences         Dr. Mieczysław Słowik         email: Mieczyslaw.Slowik@put.poznan.pl       tel. +48 61 665 24 87       Faculty of Civil and Environmental Engineering       5, Piotrowo St., PL 60-965 Poznań         Prerequisites in terms of knowledge, skills and s         1       Knowledge       Knowledge gained from course impl         1       Knowledge       Knowledge gained from course impl         Engineering, specialty Roads and M       The skills learned during the second                                                                                                                                               | Subject offered in:<br>Polish<br>rm of study (full-time,part-time)<br>full-t<br>Project/seminars:<br>(university-wide, from another fin<br>unive<br>unive<br>social competencies:<br>lemented in the full-time sec                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Course (compulsory, elective)<br>obligatory<br>ime<br>No. of credits<br>7<br>eld)<br>rsity-wide<br>ECTS distribution (number<br>and %)<br>7 100%<br>7 100%                                                                                                                               |
| Roads and Highways         Polish         obligatory           Cycle of study:         Form of study (full-time.part-time)         full-time           Second-cycle studies         full-time         No. of readits           No. of hours         Laboratory:         Project/seminars:         1         7           Status of the course in the study program (Basic, major, other)         (university-wide, from another field)         T         7           Education areas and fields of acience and art         ECTS distribution (number and %)         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100%         7         100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Roads and Highways         Cycle of study:       Fo         Second-cycle studies         No. of hours       Lecture:       -       Classes:       -       Laboratory:       -         Lecture:       -       Classes:       -       Laboratory:       -         Status of the course in the study program (Basic, major, other)         other         Education areas and fields of science and art         technical sciences         Technical sciences         Technical sciences         Dr. Mieczysław Słowik         email: Mieczysław.Slowik@put.poznan.pl       tel. +48 61 665 24 87         Faculty of Civil and Environmental Engineering       5, Piotrowo St., PL 60-965 Poznań         Prerequisites in terms of knowledge, skills and s         1       Knowledge       Knowledge gained from course imple         1       Knowledge       Knowledge gained from course imple         Engineering, specialty Roads and M       The skills learned during the second                                                                                                                                           | Polish rm of study (full-time,part-time) full-t Project/seminars: (university-wide, from another fid unive social competencies: lemented in the full-time sec                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ime<br>No. of credits<br>1 7<br>eld)<br>rsity-wide<br>ECTS distribution (number<br>and %)<br>7 100%<br>7 100%                                                                                                                                                                            |
| Second-cycle studies         full-time           No. of credits         No. of credits           Lacture:         - Classes:         - Laboratory:         Project/seminars:         1         7           Status of the course in the study program (Basic, major, other)         (university-wide, from another field)         University-wide           Education areas and fields of science and art         ECTS distribution (number and %)         7         100%           Technical sciences         7         100%         7         100%           Responsible for subject / lecturer:         Dr. Mieczysław Słowik @put.poznan.pl         Fei.4.48 61 665 24 87         7         100%           Faculty of Cvil and Environmental Engineering         5, Piotrows C. P. L60-66 Poznan         Prerequisites in terms of knowledge, skills and social competencies:           1         Knowledge         Engineering, specialty Roads and Motorways.         1         The skills learned during the second degree course concerning design, construction and maintenance of roads.           3         Social competancies         Individual work on specific task.         1         Substantive preparation of the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course [-]         2. Studen tas a systematic knowledge according to the program of the second degree course [-]         3. Subdantica preparation of the Student to pass the final exam, checking his know                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Second-cycle studies         No. of hours         Lecture:       -       Classes:       -       Laboratory:       -         Status of the course in the study program (Basic, major, other)       other       -       -         Status of the course in the study program (Basic, major, other)       other       -       -         Education areas and fields of science and art       -       -       -         Education areas and fields of science and art       -       -       -         technical sciences       Technical sciences       -       -         Technical sciences       -       -       -         Dr. Mieczysław Słowik<br>email: Mieczysław Słowik<br>email: Mieczysław.Slowik@put.poznan.pl<br>tel. +48 61 665 24 87<br>Faculty of Civil and Environmental Engineering<br>5, Piotrowo St., PL 60-965 Poznań       -       -         Prerequisites in terms of knowledge, skills and s       -       -       -         1       Knowledge       Knowledge gained from course imple       -       -       -         1       Knowledge       The skills learned during the second       -       -       - | full-t Project/seminars: (university-wide, from another file unive social competencies: lemented in the full-time sec                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | No. of credits       1     7       eld)     Image: sty-wide       ECTS distribution (number and %)     7       7     100%       7     100%                                                                                                                                               |
| No. of hours       No. of credits         Lecture:       Classes:       - Laboratory:       Project/seminars:       1       7         Status of the course in the study program (Basic, major, other)       (university-wide, from another field)       T       100%         Education areas and fields of science and art       Interview (university-wide)       ECTS distribution (number and %)         technical sciences       7       100%       7       100%         Responsible for subject / lecturer:       Dr. Mieczysław Słowik       7       100%       7       100%         Prerequisites in terms of knowledge, skills and social competencies:       F       1       Knowledge       Engineering, specialty Roads and Motorways.       1       1       1       Knowledge gained from course implemented in the full-time second degree studies in Civil       2       Skills       The skills learned during the second degree course concerning design, construction and maintenance of roads.       3       Social       Individual work on specific task.       1       Knowledge and the full-time second degree course.       []       2       Skults work the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course.       []       2       Social       Individual work on specific task.       1       1       Knowledge       []       2       3       Social       1<                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | No. of hours         Lecture:       -         Status of the course in the study program (Basic, major, other)         other         Education areas and fields of science and art         technical sciences         Technical sciences         Technical sciences         Presponsible for subject / lecturer:         Dr. Mieczysław Słowik         email: Mieczysław.Slowik@put.poznan.pl         tel. +48 61 665 24 87         Faculty of Civil and Environmental Engineering         5, Piotrowo St., PL 60-965 Poznań         Prerequisites in terms of knowledge, skills and s         1       Knowledge         The skills learned during the second                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Project/seminars:<br>(university-wide, from another fin<br>unive<br>social competencies:<br>lemented in the full-time sec                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | No. of credits       1     7       eld)     Image: sty-wide       ECTS distribution (number and %)     7       7     100%       7     100%                                                                                                                                               |
| Lacture:       -       Classes:       -       Laboratory:       -       Project/seminars:       1       7         Status of the course in the study program (Basic, major, other)       (university-wide, from another field)       university-wide         Education areas and fields of science and art       (university-wide, from another field)       ECTS distribution (number and %)         technical sciences       7       100%       7       100%         Technical sciences       7       100%       7       100%         Responsible for subject / lecturer:       Dr. Mieczyslaw Slowik       7       100%       7       100%         Dr. Mieczyslaw Slowik (Bput, poznan, pl tel. +486 f 065 24 87       Faculty of Civil and Environmental Engineering 5, Piotrowo St., PL 60-965 Poznań       Forequisites in terms of knowledge, skills and social competencies:         1       Knowledge       The skills learned during the second degree course concerning design, construction and maintenance of roads.       Individual work on specific task.         2       Skills       Individual work on specific task.       Individual work on specific task.         3       Social competencies       Individual work on specific task.       Iteld of study         Ktudy outcomes and reference to the educational results for a field of study       Study outcomes and reference to the educational results for a field of study <t< td=""><td>Lecture:       -       Classes:       -       Laboratory:       -         Status of the course in the study program (Basic, major, other)       other         Education areas and fields of science and art         technical sciences         Technical sciences         Technical sciences         Dr. Mieczysław Słowik         email: Mieczysław.Slowik@put.poznan.pl         tel. +48 61 665 24 87         Faculty of Civil and Environmental Engineering         5, Piotrowo St., PL 60-965 Poznań         Prerequisites in terms of knowledge, skills and s         1       Knowledge         The skills learned during the second</td><td>(university-wide, from another field of the second of the</td><td>1 7<br/>eld)<br/>rrsity-wide<br/>ECTS distribution (number<br/>and %)<br/>7 100%<br/>7 100%</td></t<> | Lecture:       -       Classes:       -       Laboratory:       -         Status of the course in the study program (Basic, major, other)       other         Education areas and fields of science and art         technical sciences         Technical sciences         Technical sciences         Dr. Mieczysław Słowik         email: Mieczysław.Slowik@put.poznan.pl         tel. +48 61 665 24 87         Faculty of Civil and Environmental Engineering         5, Piotrowo St., PL 60-965 Poznań         Prerequisites in terms of knowledge, skills and s         1       Knowledge         The skills learned during the second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (university-wide, from another field of the second of the | 1 7<br>eld)<br>rrsity-wide<br>ECTS distribution (number<br>and %)<br>7 100%<br>7 100%                                                                                                                                                                                                    |
| Status of the course in the study program (Basic, major, other)       (university-wide, from another field)         Status of the course in the study program (Basic, major, other)       (university-wide, from another field)         Education areas and fields of science and art       ECT 3 distibution (number and %)         technical sciences       7 100%         Technical sciences       7 100%         Responsible for subject / lecturer:       7 100%         Dr. Mieczysław Słowik       email: Mieczysław.Słowik @put.poznan.pl         tel.+48 61 665 24 87       Faculty of Civil and Environmental Engineering         5, Piotrowo St., PL 60-965 Poznań       Freerequisites in terms of knowledge, skills and social competencies:         1       Knowledge       Knowledge gained from course implemented in the full-time second degree studies in Civil Engineering, specialty Roads and Motorways.         2       Skills       The skills learned during the second degree course concerning design, construction and maintenance of roads.         3       Social competencies       Individual work on specific task.         Substantive preparation of the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course.       -[]         Stude thas a systematic knowledge according to the program of the second degree course.       -[]         Stude throws the ways of presenting knowledge in the form of verbal, analytical, graphical and multimedia -[-]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Status of the course in the study program (Basic, major, other)         other         Education areas and fields of science and art         technical sciences         Technical sciences         Technical sciences         Presponsible for subject / lecturer:         Dr. Mieczysław Słowik         email: Mieczyslaw.Slowik@put.poznan.pl         tel. +48 61 665 24 87         Faculty of Civil and Environmental Engineering         5, Piotrowo St., PL 60-965 Poznań         Prerequisites in terms of knowledge, skills and s         1       Knowledge         The skills learned during the second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (university-wide, from another field of the second of the | eld)<br><b>rSity-wide</b><br>ECTS distribution (number<br>and %)<br><b>7 100%</b><br><b>7 100%</b>                                                                                                                                                                                       |
| other         university-wide           Education areas and fields of science and art         ECTS distribution (number<br>and %).           technical sciences         7 100%           Technical sciences         7 100%           Responsible for subject / lecturer:         7 100%           Dr. Mieczyslaw Slowik<br>email: Mieczyslaw Slowik @put.poznan.pl<br>tel. +48 61 665 24 87<br>Faculty of Civil and Environmental Engineering<br>5, Piotrowo St., PL 60-965 Poznaf         7           Prerequisites in terms of knowledge, skills and social competencies:         1           1         Knowledge         Engineering, specialty Roads and Motorways.           2         Skills         The skills learned during the second degree course concerning design, construction and<br>maintenance of roads.           3         Social<br>competencies         Individual work on specific task.           Study outcomes and reference to the educational results for a field of study           Knowledge:         1           1. Studen thas a systematic knowledge according to the program of the second degree course [-]           2. Studen tas the knowledge necessary to perform his Master thesis - [-]           3. Studen tas a systematic knowledge according to the program of the second degree course [-]           3. Student tas a systematic knowledge according to the program of the second degree course [-]           3. Student tas a systematic knowledge according to the program of the second degree cou                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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Mieczysław Słowik @put.poznan.pl         tel. +48 61 665 24 87         Faculty of Civil and Environmental Engineering         5, Piotrowo St., PL 60-965 Poznań         Knowledge, skills and s         1       Knowledge         1       Knowledge         1       Knowledge         1       The skills learned during the second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | social competencies:                                                                                                 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                                                                                                                                                                                                                  |
| Education areas and fields of science and art       ECTS distribution (number and %)         technical sciences       7         Technical sciences       7         Dr. Mieczyslaw Slowik       7         email: Mieczyslaw Slowik       7         Faculty of Civil and Environmental Engineering       5         p. Jetrowo St., PL 60-965 Poznań       7         Prerequisites in terms of knowledge, skills and social competencies:       1         Knowledge       Engineering, specialty Roads and Motorways.         2       Skills       The skills learned during the second degree course concerning design, construction and maintenance of roads.         3       Social competencies       Individual work on specific task.         Substantive preparation of the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course [-]         Studen thas a systematic knowledge according to the program of the second degree course [-]         Studen thas a systematic knowledge according to the program of the second degree course [-]         Student knows the ways of presenting knowledge in the form of verbat, a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Education areas and fields of science and art         technical sciences         Technical sciences         Responsible for subject / lecturer:         Dr. Mieczysław Słowik         email: Mieczyslaw.Slowik@put.poznan.pl         tel. +48 61 665 24 87         Faculty of Civil and Environmental Engineering         5, Piotrowo St., PL 60-965 Poznań         Prerequisites in terms of knowledge, skills and s         1       Knowledge         The skills learned during the second                                                                                                                                                                                                                                                               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| technical sciences       7       100%         Technical sciences       7       100%         Responsible for subject / lecturer:       Dr. Mieczyslaw Słowik       7       100%         Dr. Mieczyslaw Słowik       email: Mieczyslaw Słowik @put.poznan.pl       1       1       7       100%         Faculty of Civil and Environmental Engineering       5, Piotrowo St., PL 60-965 Poznań       7       100%         Prerequisites in terms of knowledge, skills and social competencies:       1       Knowledge       Fonviedge gained from course implemented in the full-time second degree studies in Civil         2       Skills       The skills learned during the second degree course concerning design, construction and maintenance or roads.         3       Social competencies       Individual work on specific task.         Substantive preparation of the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course.         Study outcomes and reference to the educational results for a field of study         Knowledge:       1.         1. Student has a systematic knowledge according to the program of the second degree course [-]         2. Student has use to knowledge of different subjects (various areas) - [K_U05]         2. Student is able to link knowledge of different subjects (various areas) - [K_U05]         2. Student is able to link knowledge of different subjects (various areas) -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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 tel. +48 61 665 24 87       Faculty of Civil and Environmental Engineering         5, Piotrowo St., PL 60-965 Poznań       Prerequisites in terms of knowledge, skills and s         1       Knowledge         1       Knowledge         1       The skills learned during the second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | lemented in the full-time sec                                                         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| Technical sciences       7 100%         Responsible for subject / lecturer:       Dr. Mieczysław Słowik @put.poznan.pl         Itel. +48 for 655 24 87       Faculty of Civil and Environmental Engineering         5, Piotrowo St., PL 60-965 Poznań       Faculty of Civil and Environmental Engineering         7       Nowledge gained from course implemented in the full-time second degree studies in Civil         1       Knowledge       Knowledge gained from course implemented in the full-time second degree studies in Civil         2       Skills       The skills learned during the second degree course concerning design, construction and maintenance of roads.         3       Social competencies       Individual work on specific task.         Substantive preparation of the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course.         Study outcomes and reference to the educational results for a field of study         Knowledge:       1.         1. Student kans a systematic knowledge according to the program of the second degree course [-]         2. Student kans the knowledge of different subjects (various areas) - [K_U05]         2. Student can choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K_U17]         Social competencies:       1         1. Student kanowledge of different subjects (various areas) - [K_U05]         2. 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Prerequisites in terms of knowledge, skills and s         1       Knowledge         1       Knowledge         1       Knowledge         1       The skills learned during the second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | lemented in the full-time sec                                                                                                                                            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| Technical sciences       7 100%         Responsible for subject / lecturer:       Dr. Mieczysław Słowik @put.poznan.pl         Itel. +48 for 655 24 87       Faculty of Civil and Environmental Engineering         5, Piotrowo St., PL 60-965 Poznań       Faculty of Civil and Environmental Engineering         7       Nowledge gained from course implemented in the full-time second degree studies in Civil         1       Knowledge       Knowledge gained from course implemented in the full-time second degree studies in Civil         2       Skills       The skills learned during the second degree course concerning design, construction and maintenance of roads.         3       Social competencies       Individual work on specific task.         Substantive preparation of the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course.         Study outcomes and reference to the educational results for a field of study         Knowledge:       1.         1. Student kans a systematic knowledge according to the program of the second degree course [-]         2. Student kans the knowledge of different subjects (various areas) - [K_U05]         2. Student can choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K_U17]         Social competencies:       1         1. Student kanowledge of different subjects (various areas) - [K_U05]         2. Student can choose the tool                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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Prerequisites in terms of knowledge, skills and s         1       Knowledge         1       Knowledge         1       Knowledge         1       The skills learned during the second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | lemented in the full-time sec                                                                                                                                            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| Responsible for subject / lecturer:         Dr. Mieczysław Słowik         email: Mieczysław Słowik @put.poznan.pl         tel. +48 61 665 24 87         Faculty of Civil and Environmental Engineering         5, Piotrowo St., PL 60-965 Poznań         Prerequisites in terms of knowledge, skills and social competencies:         1       Knowledge         2       Skills         3       Social         competencies       Individual work on specific task.         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| Dr. Mieczysław Słowik         emai: Mieczysław Słowik @put.poznan.pl         tel. +48 61 665 24 87         Facułty of Civil and Environmental Engineering         5. Piotrowo St., PL 60-965 Poznań         Prerequisites in terms of knowledge, skills and social competencies:         1       Knowledge         2       Skills         3       Social competencies         Individual work on specific task.         Study outcomes and reference to the educational results for a field of study         Monester to the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course.         Study outcomes and reference to the educational results for a field of study         Monester the Student to pass the final exam, checking his knowledge and multimedia - [-]         Study outcomes and reference to the educational results for a field of study         Monester to presenting knowledge in the form of verbal, analytical, graphical and multimedia - [-]         Student has a systematic knowledge of different subjects (various areas) - [K_U05]         Student is able to link knowledge of different subjects (various areas) - [K_U05]         Student kas us word presenting knowledge in the form of verbal, analytical, graphical and multimedia - [-]         Skills       -                                                                                                                                                                                                                                                                                                                             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Student can choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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skills learned during the second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | lemented in the full-time sec                                         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Civil                                                                                                                                                                                                                                                              |
| 1       Knowledge       Knowledge gained from course implemented in the full-time second degree studies in Civil Engineering, specialty Roads and Motorways.         2       Skills       The skills learned during the second degree course concerning design, construction and maintenance of roads.         3       Social competencies       Individual work on specific task.         Assumptions and objectives of the course:       Substantive preparation of the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course.         Study outcomes and reference to the educational results for a field of study         Knowledge:         1.       Student has a systematic knowledge according to the program of the second degree course [-]         2.       Student has the knowledge necessary to perform his Master thesis - [-]         3.       Student can, choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K_U13         3.       Student can, in accordance with scientific principles, to formulate and carry out preliminary research work leading to solutions of the problems arising in road engineering - [K_U17]         Social competencies:       1         1.       Student is able to formulate and present opinions on civil engineering - [K_K07]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| 1       Knowledge       Engineering, specialty Roads and Motorways.         2       Skills       The skills learned during the second degree course concerning design, construction and maintenance of roads.         3       Social competencies       Individual work on specific task.         Assumptions and objectives of the course:       Substantive preparation of the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course.         Study outcomes and reference to the educational results for a field of study         Knowledge:         1. Student has a systematic knowledge according to the program of the second degree course [-]         2. Student knows the ways of presenting knowledge in the form of verbal, analytical, graphical and multimedia - [-]         Skills:         1. Student is able to link knowledge of different subjects (various areas) - [K_U05]         2. Student can, in accordance with scientific principles, to formulate and carry out preliminary research work leading to solutions of the problems arising in road engineering - [K_U17]         Social competencies:         1. Student is aware of the need to enhance his professional and personal competence - [K_K06]         2. Student is able to formulate and present opinions on civil engineering - [K_K07]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| 2       Skills       maintenance of roads.         3       Social competencies       Individual work on specific task.         Assumptions and objectives of the course:       Substantive preparation of the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course.         Study outcomes and reference to the educational results for a field of study         Knowledge:         1. Student has a systematic knowledge according to the program of the second degree course [-]         2. Student has the knowledge necessary to perform his Master thesis - [-]         3. Student knows the ways of presenting knowledge in the form of verbal, analytical, graphical and multimedia - [-]         Skills:         1. Student is able to link knowledge of different subjects (various areas) - [K_U05]         2. Student can choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K_U13]         3. Student can, in accordance with scientific principles, to formulate and carry out preliminary research work leading to solutions of the problems arising in road engineering - [K_U17]         Social competencies:         1. Student is aware of the need to enhance his professional and personal competence - [K_K06]         2. Student is able to formulate and present opinions on civil engineering - [K_K07]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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                 | iona degree studies in Civil                                                                                                                                                                                                                                                             |
| S       competencies         Assumptions and objectives of the course:         Substantive preparation of the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course.         Study outcomes and reference to the educational results for a field of study         Knowledge:         1. Student has a systematic knowledge according to the program of the second degree course [-]         2. Student has the knowledge necessary to perform his Master thesis - [-]         3. Student knows the ways of presenting knowledge in the form of verbal, analytical, graphical and multimedia - [-]         Skills:         1. Student is able to link knowledge of different subjects (various areas) - [K_U05]         2. Student can choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K_U13         3. Student can, in accordance with scientific principles, to formulate and carry out preliminary research work leading to solutions of the problems arising in road engineering - [K_U17]         Social competencies:         1. Student is aware of the need to enhance his professional and personal competence - [K_K06]         2. Student is able to formulate and present opinions on civil engineering - [K_K07]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| competencies         Assumptions and objectives of the course:         Substantive preparation of the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course.         Study outcomes and reference to the educational results for a field of study         Knowledge:         1. Student has a systematic knowledge according to the program of the second degree course [-]         2. Student has the knowledge necessary to perform his Master thesis - [-]         3. Student knows the ways of presenting knowledge in the form of verbal, analytical, graphical and multimedia - [-]         Skills:         1. Student is able to link knowledge of different subjects (various areas) - [K_U05]         2. Student can choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K_U13         3. Student can, in accordance with scientific principles, to formulate and carry out preliminary research work leading to solutions of the problems arising in road engineering - [K_U17]         Social competencies:         1. Student is able to formulate and present opinions on civil engineering - [K_K07]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| Substantive preparation of the Student to pass the final exam, checking his knowledge and the skills learned during the second degree course.  Study outcomes and reference to the educational results for a field of study Knowledge:  Student has a systematic knowledge according to the program of the second degree course [-] Student has the knowledge necessary to perform his Master thesis - [-] Student knows the ways of presenting knowledge in the form of verbal, analytical, graphical and multimedia - [-] Skills:  Student is able to link knowledge of different subjects (various areas) - [K_U05] Student can choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K_U13 Student can, in accordance with scientific principles, to formulate and carry out preliminary research work leading to solutions of the problems arising in road engineering - [K_U17] Social competencies: Student is aware of the need to enhance his professional and personal competence - [K_K06] Student is able to formulate and present opinions on civil engineering - [K_K07]                                                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Student is able to formulate and present opinions on civil engineering - [K_K07]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| <ol> <li>Student has a systematic knowledge according to the program of the second degree course [-]</li> <li>Student has the knowledge necessary to perform his Master thesis - [-]</li> <li>Student knows the ways of presenting knowledge in the form of verbal, analytical, graphical and multimedia - [-]</li> <li>Skills:         <ol> <li>Student is able to link knowledge of different subjects (various areas) - [K_U05]</li> <li>Student can choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K_U13</li> <li>Student can, in accordance with scientific principles, to formulate and carry out preliminary research work leading to solutions of the problems arising in road engineering - [K_U17]</li> </ol> </li> <li>Student is aware of the need to enhance his professional and personal competence - [K_K06]</li> <li>Student is able to formulate and present opinions on civil engineering - [K_K07]</li> </ol>                                             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| <ol> <li>Student has the knowledge necessary to perform his Master thesis - [-]</li> <li>Student knows the ways of presenting knowledge in the form of verbal, analytical, graphical and multimedia - [-]</li> <li>Stulent knows the ways of presenting knowledge in the form of verbal, analytical, graphical and multimedia - [-]</li> <li>Stulent is able to link knowledge of different subjects (various areas) - [K_U05]</li> <li>Student can choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K_U13</li> <li>Student can, in accordance with scientific principles, to formulate and carry out preliminary research work leading to solutions of the problems arising in road engineering - [K_U17]</li> <li>Social competencies:         <ol> <li>Student is aware of the need to enhance his professional and personal competence - [K_K06]</li> <li>Student is able to formulate and present opinions on civil engineering - [K_K07]</li> </ol> </li> </ol>           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| <ol> <li>Student knows the ways of presenting knowledge in the form of verbal, analytical, graphical and multimedia - [-]</li> <li>Skills:         <ol> <li>Student is able to link knowledge of different subjects (various areas) - [K_U05]</li> <li>Student can choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K_U13</li> <li>Student can, in accordance with scientific principles, to formulate and carry out preliminary research work leading to solutions of the problems arising in road engineering - [K_U17]</li> </ol> </li> <li>Student is aware of the need to enhance his professional and personal competence - [K_K06]</li> <li>Student is able to formulate and present opinions on civil engineering - [K_K07]</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1. 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| Skills:         1. Student is able to link knowledge of different subjects (various areas) - [K_U05]         2. Student can choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K_U13]         3. Student can, in accordance with scientific principles, to formulate and carry out preliminary research work leading to solutions of the problems arising in road engineering - [K_U17]         Social competencies:         1. Student is aware of the need to enhance his professional and personal competence - [K_K06]         2. Student is able to formulate and present opinions on civil engineering - [K_K07]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2. Student has the knowledge necessary to perform his Master the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | esis - [-]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                          |
| <ol> <li>Student is able to link knowledge of different subjects (various areas) - [K_U05]</li> <li>Student can choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K_U13</li> <li>Student can, in accordance with scientific principles, to formulate and carry out preliminary research work leading to solutions of the problems arising in road engineering - [K_U17]</li> <li>Social competencies:         <ol> <li>Student is aware of the need to enhance his professional and personal competence - [K_K06]</li> <li>Student is able to formulate and present opinions on civil engineering - [K_K07]</li> </ol> </li> </ol>                                                                                                                                                                                                                                                                                                                                               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| <ol> <li>Student can choose the tool (analytical or numerical) to solve technical problems (concerning road construction) - [K_U13</li> <li>Student can, in accordance with scientific principles, to formulate and carry out preliminary research work leading to solutions of the problems arising in road engineering - [K_U17]</li> <li>Social competencies:         <ol> <li>Student is aware of the need to enhance his professional and personal competence - [K_K06]</li> <li>Student is able to formulate and present opinions on civil engineering - [K_K07]</li> </ol> </li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                          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| <ul> <li>3. Student can, in accordance with scientific principles, to formulate and carry out preliminary research work leading to solutions of the problems arising in road engineering - [K_U17]</li> <li>Social competencies:</li> <li>1. Student is aware of the need to enhance his professional and personal competence - [K_K06]</li> <li>2. Student is able to formulate and present opinions on civil engineering - [K_K07]</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| Social competencies:<br>1. Student is aware of the need to enhance his professional and personal competence - [K_K06]<br>2. Student is able to formulate and present opinions on civil engineering - [K_K07]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3. Student can, in accordance with scientific principles, to formulat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                          |
| <ol> <li>Student is aware of the need to enhance his professional and personal competence - [K_K06]</li> <li>Student is able to formulate and present opinions on civil engineering - [K_K07]</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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| 2. Student is able to formulate and present opinions on civil engineering - [K_K07]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| 3. Student presentations in media are communicative - [K_K09]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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Student presentations in media are communicative - [K_K09]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                          |

| Preparation for the final exam assesses the supervisor based on the concerning his Master thesis and based on checking the current Stu |                                    |                          |
|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------------|
| Course descr                                                                                                                           | iption                             |                          |
| Program contents in accordance with the tasks detailed in the Maste                                                                    | er's thesis topic and framework is | ssues of the final exam. |
| Basic bibliography:                                                                                                                    |                                    |                          |
| 1. Basic scientific and technical literature regarding the program of s                                                                | econd degree course.               |                          |
|                                                                                                                                        |                                    |                          |
| Additional bibliography:                                                                                                               |                                    |                          |
| 1. Additional scientific and technical literature regarding the program                                                                | of second dearee course.           |                          |
|                                                                                                                                        | Ũ                                  |                          |
| Result of average stud                                                                                                                 | lent's workload                    |                          |
| Activity                                                                                                                               |                                    | Time (working hours)     |
| 1. Consultation with the supervisor of Master thesis                                                                                   |                                    | 2                        |
| 2. Individual preparation for the final exam                                                                                           |                                    | 180                      |
| Student's wo                                                                                                                           | rkload                             |                          |
| Source of workload                                                                                                                     | hours                              | ECTS                     |
| Total workload                                                                                                                         | 175                                | 7                        |
| Contact hours                                                                                                                          | 0                                  | 0                        |
| Practical activities                                                                                                                   | 75                                 | 3                        |