

**DEN 5010 Scientific Project in Dentistry**

| Course title  | Code  | Semester | Type of course | Course structure and volume (hours) |     |     | ECTS |
|---|---|----------|----------------|-------------------------------------|-----|-----|------|
| Scientific Project in Dentistry                         | DEN5010   | X        | Mandatory      | CONSULTATION                        | 34  | 300 | 10   |
|   |   |          |                | MIDTERM EV.                         |     |     |      |
|   |   |          |                | DEFENSE                             | 2   |     |      |
|   |   |          |                | INDEP. WORK                         | 264 |     |      |
| Faculty, the educational program and level of education | School of Medicine and Health Sciences,<br>One cycle (5-year duration) Higher Educational Program “Dentistry”   |          |                |                                     |     |     |      |
| Staff   | The supervisor of project will be chosen from professors (professor, associate or assistant professor) of Dentistry department of BAU   |          |                |                                     |     |     |      |
|   | School members to the project assigned individually, by a choice of the student.  |          |                |                                     |     |     |      |
|   | Other faculty member, selected by the university act as a reviewer for each research project  |          |                |                                     |     |     |      |
| Duration  | 16 weeks  |          |                |                                     |     |     |      |
| Prerequisite  | MED 4013 Evidence Based Dentistry<br>at least 200 ECTS of Biomedical/Dental subjects shall be covered   |          |                |                                     |     |     |      |
| Aim   | The purpose of this course is to develop a student's ability to plan and conduct research, including the selection and application of appropriate research methodology, utilizing field research skills, working with scientific literature, argumentation of conclusions using appropriate scientific discourse and providing results in a form of scientific article. |          |                |                                     |     |     |      |
|   | Students, under supervision, will select the research topic, adjust research methodology, work with scientific sources and other materials, justify their own knowledge, and publicly present the findings.   |          |                |                                     |     |     |      |
| Methods of Teaching/Learning                            | Interactive consultations with project supervisor<br>(Verbal, Discussion, Debates, Case study, Action oriented learning, Brain storming, Project)   |          |                |                                     |     |     |      |

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| <b>Phases of working on project</b> | <p>The process of working on project consists of the following phases:</p> <ul style="list-style-type: none"> <li> <b>SELECTION OF RESEARCH TOPIC – 1<sup>st</sup> week of the semester</b><br/> Student selects a research topic of his interest from the list, provided by the university and submits it to the faculty not later than the 1<sup>st</sup> week of respective semester.<br/> Research topic shall be covering actual but not broad research problem within the major scientific scope of the program and shall allow the student to demonstrate his or her original approach considering available sources for conducting research.<br/> Students can select research topics based on their individual research interest. In this case student must submit the title of the project and the candidate for supervision before the beginning of last semester. Research topics have to be approved by faculty council. </li> <li> <b>APPROVAL OF RESEARCH PLAN – 3rd week of the semester</b><br/> After the registration of research topic, student provides detailed plan for research to the project supervisor, with whom they summarize the project plan. Student with supervisor draft the research plan, which shall include the exact title, project (research question) and general plan of the research.<br/> Research plans are pre-approved and evaluated by the supervisor and reviewers and approved by the faculty council. </li> <li> <b>CONSULTATIONS WITH SUPERVISOR - All semester (15 weeks)</b><br/> Students has weekly consultations with project supervisor in a semestral according to the schedule. Student will be assessed in 6 of them. In order to receive positive assessment, student has to score +50 % positive in the consultations' assessment. </li> <li> <b>INDEPENDENT RESEARCH, WORKING WITH LITERATURE, SCIENTIFIC AND LABORATORY RESOURCES – All semester (15 weeks)</b><br/> Student conducts research, gathers data, works with research sources independently, working out research data and preparing the text part of the paper, following the steps and deadlines described in the research plan.<br/> Conducting independent research student has to consider appropriate rules of scientific research ethics, personal data protection and principles of presentation objective and appropriate data. All data gathered during research shall be presented only in generalized manner and only for research purposes.<br/> Ongoing results of the independent research are discussed with the supervisor during the consultation hours. </li> <li> <b>INITIAL SUBMISSION OF THE RESEARCH PAPER – Week 15<sup>th</sup></b><br/> Student submits the first version of the project paper, which is in compliance with university rules to the faculty for evaluation and plagiarism check. Overdue papers are not accepted and will not be assessed. Research paper shall present that student, under supervision conducted independent research, and was able to work out the problem with scientific methods as well as presenting information and findings and a scientifically proper manner. <ul style="list-style-type: none"> <li> <b>a) AUTHENTICITY &amp; PLAGIARISM CHECK – Week 16<sup>th</sup></b><br/> project supervisor provides authenticity and plagiarism check of the research paper using Turnitin software. </li> </ul> </li> </ul> |
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|                                       | <p>In case of plagiarism, as defined by the Academic Honors Code of the University, the paper is not evaluated and it's submitted to university Academic Honors Committee, for prescribed proceedings.</p> <p>Total percentage of properly cited non-original text in the paper shall not exceed 30% of total text, defined by the Turnitin software.</p> <p>In case of more than 30%, but not more than 60% - moderate plagiarism, the supervisor makes a decision to return the paper to the student for correction; The student is obliged to re-upload the processed scientific paper (in case of granting such authority) on the platform no later than the 16th academic week. In case of initial submission more than 60% (gross plagiarism) or in case of repeated submission more than 30%, the paper will be assessed as "insufficient";</p> <p><b>b) EVALUATION OF THE RESEARCH PAPER BY SUPERVISOR – Week 16<sup>th</sup></b></p> <p>Initial evaluation of the research paper is conducted by the supervisor of the project. During the evaluation supervisor evaluates the project by the prescribed criteria, regarding evaluation system listed in this syllabus. Supervisor can suggest on further improvement of the text and findings, if these can be implemented considering existing research data. If the research paper evaluated above the threshold, paper is submitted for evaluation to the reviewers.</p> <p><b>c) EVALUATION OF THE RESEARCH PAPER BY REVIEWER– week 17<sup>th</sup></b></p> <p>Upon the evaluation of the supervisor, paper with its authenticity report is given for evaluation to reviewer, who evaluate the project paper by the prescribed criteria, regarding evaluation system listed in this syllabus. Besides evaluation, each reviewer defines strong and weak parts of the research paper, and submits up to 3 questions to the students, which shall be answered in defense presentation.</p> <ul style="list-style-type: none"> <li>● <b>PREPARATION FOR DEFENSE – Week 18<sup>th</sup></b><br/>Student has final week to finalize the paper, considering feedback from reviewers and supervisor, as well to prepare print version and ppt presentation for defense.</li> <li>● <b>PUBLIC DEFENSE – Week 19<sup>th</sup></b><br/>Public defense of the project is mandatory. Student has to present 15-20 minute presentation, covering research topic and research question, methodology used for research, findings and conclusion, as well as to answer reviewers' questions. Defense is conducted orally, using ppt presentation, in front of project supervisor, reviewers and at least two independent members of defense committee.</li> </ul> |
| <b>Assessment System and Criteria</b> | <p>The scientific project of the student is evaluated by 100 score-based evaluation system out of which 60 scores considered for the current assessment and 40 scores for the final assessment (defense).</p> <p><b>ASSESSMENT SYSTEM</b></p> <ul style="list-style-type: none"> <li>● Participation in the consultations –6 points</li> <li>● Evaluation of research paper by supervisor (Evaluation of independent research, working with literature, scientific and laboratory resources by supervisor)– 30 points</li> <li>● Evaluation of research paper by reviewer – 24 points</li> <li>● Final Evaluation - Defense of the project – 40 points.</li> </ul> <p><b>1. PARTICIPATION IN THE CONSULTATIONS</b></p>  |

From weekly consultations with supervisor, during the semester, by the choice of the supervisor and research plan, 6 consultation sessions are held. each session is evaluated with up to 1 point considering following criteria.

**1 point** – student is present, participates in discussion prepared and presenting the research findings from the previous period

**0.5 points** –students is present, participates in discussion with no progress in research from the previous period.

**0 points** – students is absent, not prepared not participating in the discussion about the project.

The threshold for the evaluation of this component is 3 points

## **2. EVALUATION OF RESEARCH PAPER BY SUPERVISOR (Max 30 points)**

### **EVALUATION OF INDEPENDENT RESEARCH, WORKING WITH LITERATURE, SCIENTIFIC AND LABORATORY RESOURCES**

First draft of the research paper is evaluated by the supervisor of the project, which is evaluated by the supervisor with 0 to 30 points regarding following criteria:

1. Understanding and refinement of problem and research question - 0-3 points
2. Methods and set-up of study and experiments to get and evaluate results – 0-3 points
3. Identification of the scope and object(s) for research – 0-3 points
4. Data gathering - 0-3 points
5. Discussion of findings independently – 0- 3 points
6. Preparing the text part of the paper, following the steps and deadlines – 0-3 points
7. Ability to consider of appropriate rules of scientific research ethics – 0-3 points
8. Ability to analysis- 0-3 points
9. Initiative, creativity, ambition – 0-3 points
10. Planning and organization – 0-3 points

#### **Assessment system**

Points in each component of evaluation are awarded regarding the following criteria:

**3 points:** excellent

**2 points:** good

**1 point:** satisfactory

**0 points:** unsatisfactory

The threshold evaluation for the research project is 10 points

## **3. EVALUATION OF RESEARCH PAPER BY REVIEWER (Max 24 points):**

### **Reviewer Assessment criteria:**

1. Novelty of project topics – 0-3 points
2. Practical application of the research topic – 0-3 points.
3. Quality of the research conducted, compliance of the selected methodology and scope to the research problem addressed – **0-3 points.**
4. Quality and relevance of the research sources, literature and other materials used – **0-3 points.**
5. Quality of processing the obtained results, using statistical or other methods– **0-3 points.**
6. Argumentation of the findings based on research – **0-3 points.**

7. Language and style of the paper – **0-3 points.**
8. compliance to the standards of citations and indicating bibliography – **0-3 points.**

**Assessment system**

Points in each component of evaluation are awarded regarding the following criteria:

**3 points:** excellent

**2 points:** good

**1 point:** satisfactory

**0 points:** unsatisfactory

The threshold evaluation for the research project is 10 points.

**4. DEFENSE ( max 40 points)**

Defense is evaluated by a commission, consisting of BAU faculty and invited peers. project supervisor and reviewer present, can ask questions but do not participate in the evaluation. Each member of the commission evaluates the student regarding following criteria. Final score of the defense is calculated by average score of all members' evaluation.

Content of the presentation and project is assessed up to 20 points, presentation itself up to 10 points and answers to the commission and reviewers – up to 10 points.

• **CONTENT**

**Research topic actuality: 5 points**

5 point-the research topic is fully presented and answers all questions.

3-4 point- main purpose of the research is identified, but some issues are not presented in the paper.

2-1 point –important issues are missed in the paper.

0 point- Discussion is not reasonable and justified.

**Analysis of Sources-total 5 points**

5 point- Student is familiar with the literature and other sources related to the research topic. The secondary data is analyzed and deliberately demonstrated.

4 point- Student is familiar with the literature and other sources related to the research topic. Not all the secondary data is analyzed and deliberately demonstrated.

3 point- Literature is used, but there is lack of important articles.

2-1 point- Literature and secondary data are not enough.

0 point- Quality of literature and other sources is below accepted.

**Analysis of Study results obtained - 5 points**

5 point- Student describes conducted research and its instruments with due knowledge. The primary data is analyzed and deliberately demonstrated.

4 point- Student describes conducted research and its instruments with due knowledge. Not all the primary data is analyzed and deliberately demonstrated.

3 point- There is lack of important issues in the research analysis.

2-1 point- Research instruments and/or primary data are not enough.

0 point- Quality of research instruments and/or primary data is below accepted

**Relevance of the conclusions - 5 points**

5 point- Student defines proper conclusions based on research topic and questions and substantiates them with proper primary and secondary data

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|  | <p>4 point- Student defines proper conclusions based on research topic and questions. There is minor misinterpretations of either primary and/or secondary data.</p> <p>3 point- Student defines proper conclusions based on research topic and questions. There is misinterpretations of primary and/or secondary data</p> <p>2-1 point- Student's conclusions are not reliably based on primary and/or secondary data.</p> <p>0 point- Student's conclusions are not in line with research topic and questions as well with primary or secondary data.</p> <p><b>PRESENTATION 10 points</b></p> <p>10 points - Presentation, language and communication with audience are perfect.</p> <p>7-9 points – Presentation, language and communication with audience are good.</p> <p>4-6 points - Presentation and communication with audience are satisfactory.</p> <p>presentation is good, but there is lack of self-confidence in communication with audience</p> <p>1-3 points - There are mistakes in presentation, student cannot communicate with audience</p> <p>0 point- student cannot present research topic properly.</p> <p><b>ANSWERS</b></p> <p><b>10-9 points</b> - All reviewers' questions are answered properly. Auditorium's questions are answered.</p> <p><b>7-8 points</b> - Most of reviewers' questions are answered properly. Auditorium's questions are answered.</p> <p><b>5-6 points</b> - Some of reviewers' questions are answered properly. Auditorium's questions are answered.</p> <p><b>3-4 points</b> - Few of reviewers' questions are answered properly. Auditorium's questions are answered fragmentally.</p> <p><b>1-2 points</b> - None of reviewers' questions are answered properly. Auditorium's questions are answered fragmentally.</p> <p><b>0 points</b> - None of reviewers' and auditorium's questions are answered properly.</p> <p>The highest possible score for defense is 40. Threshold is 60% (24 points).</p> <p>Prerequisite for Final Exam is the situation when threshold of the current evaluation components is achieved</p> <p>If the final evaluation for the Learning Course, after taking the additional exam is less than 51%, the learning course is not considered covered and it must be taken again.</p> <p>In summary, the student is awarded the credit in case he/she accumulates minimum 51% out of 100%.</p> <p><b>POSITIVE SCORES:</b></p> <ul style="list-style-type: none"> <li>• (A) Excellent- 91 or more points;</li> <li>• (B) Very Good- 81-90 points;</li> <li>• (C) Good- 71-80 points;</li> <li>• (D) Satisfactory- 61-70 points;</li> <li>• (E) Enough- 51-60 points;</li> </ul> <p><b>NEGATIVE SCORES:</b></p> |
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|  | <ul style="list-style-type: none"> <li>• (FX) Failure - 41-50 points: the student needs more independent work and is granted a single attempt of retake, which means modification of the presentation, or conclusions of the research paper and retaking the defense;</li> <li>• (F) Fail - 40 points or less: the student's conducted work is not sufficient and needs to take the course again. Student is not eligible to take same research topic for the following semester.</li> </ul> <p>The student can take the make-up during the same semester, after at least 15 days from the defence date. If the final evaluation for the project, after taking the additional defence, (current evaluation +defence evaluation) is less than 51%, the learning course is not considered covered and it must be taken again.</p> |
|  | <p>Additional Requirements:</p> <p>Student is expected to be familiar and follow the university rules for Academic integrity, Scientific research ethics, rule of conducting the scientific paper, and academic style of American Medical Association (AMA)</p>   |

## Learning Outcomes

| NQF<br>*  | COURSE LEARNING OUTCOMES   | PRO<br>GLO-<br>s             | CO<br>NS<br>UL<br>TA<br>TION | PR<br>OJ<br>E<br>CT<br>PR<br>E<br>SE<br>NT<br>ATION | PAP<br>ER<br>PRES<br>ENT<br>ATION | PAPE<br>R<br>REVIE<br>W | DE<br>FE<br>NC<br>E | ASSESSMEN<br>T METHODS  |
|---|--|------------------------------|------------------------------|---|-----------------------------------|-------------------------|---------------------|---|
| <b>KNO<br/>WLE<br/>DGE<br/>AND<br/>AW<br/>ARE<br/>NES<br/>S</b>     | Student:<br><br><b>Understands</b> principles of the scientific research in the field of dentistry<br><b>Analyzes</b> complex issues regarding working with interpretation of scientific findings<br><b>Identifies</b> proper research methodology and scope for research.   | 1.2                          | X                            | X   | X                                 |                         | X                   | Consultation<br><br>Project<br>evaluation<br><br>Paper<br>evaluation<br><br>Presentation                        |
| <b>SKIL<br/>LS</b>  | <b>Selects</b> proper methods and tools for analyzing issues and solving problems related to project.<br><b>Interprets</b> adequate data for the objectives and tasks set out;<br><b>Analyzes</b> relevant data and/or situations using scientifically proper methods;<br><b>Interprets</b> the literature and makes necessary conclusions<br><b>Strives</b> to find information sources and identify ways of solving problems related to project.<br><b>Respects</b> academic honors principles in presenting own and using others' work.<br><b>Ensures</b> taking responsibility to present, argument and evaluate own work independently<br><b>Demonstrates</b> ethics of scientific communication and debate | 1.2<br>2.2                   | X                            | X   | X                                 |                         | X                   | Consultation<br><br>Project<br>evaluation<br><br>Paper<br>evaluation<br><br>Presentation                        |
| <b>RESP<br/>ONS<br/>IBILI<br/>TY<br/>AND<br/>AUT<br/>ONO<br/>MY</b> | <ul style="list-style-type: none"> <li>Has the ability of critical thinking, analysis and synthesis;</li> <li>Has the ability to manage information</li> <li>Has ability to work independently</li> <li>Has the ability of problem solving, critical thinking and decision making</li> </ul>   | 11.1<br>11.2<br>11.3<br>11.4 |                              | X   | X                                 | X                       | X                   | Consultation<br><br>Project<br>evaluation<br><br>Paper<br>evaluation<br><br>Paper<br>review<br><br>Presentation |



**Course Agenda**

| <b>Weeks</b> | <b>Topics</b>   | <b>Consultation (Hrs.)</b> | <b>Other (Hrs.)</b> |
|--------------|---|----------------------------|---------------------|
| I            | Consultation<br>Selection of the project topic  | 2                          |                     |
| II           | Consultation<br>Working on research plan  | 2                          |                     |
| III          | Consultation<br><b>Presentation of research plan</b>  | 2                          |                     |
| IV           | Consultation  | 2                          |                     |
| V            | Consultation  | 2                          |                     |
| VI           | Consultation  | 2                          |                     |
| VII          | Consultation  | 2                          |                     |
| VIII         | Consultation  | 2                          |                     |
| IX           | Consultation  | 2                          |                     |
| X            | Consultation  | 2                          |                     |
| XI           | Consultation  | 2                          |                     |
| XII          | Consultation  | 2                          |                     |
| XIII         | Consultation  | 2                          |                     |
| XIV          | Consultation  | 2                          |                     |
| XV           | <b>INITIAL SUBMISSION OF THE RESEARCH PAPER</b>   | 2                          |                     |
| XVI          | <b>AUTHENTICITY &amp; PLAGIARISM CHECK<br/>EVALUATION OF THE RESEARCH PAPER BY SUPERVISOR</b> | 2                          |                     |
| XVII         | <b>EVALUATION OF THE RESEARCH PAPER BY REVIEWER–</b>  | 2                          |                     |
| XVIII        | <b>PREPARATION FOR DEFENSE</b>  |                            |                     |
| XIX          | <b>PUBLIC DEFENSE</b>   |                            | 2                   |

