

Intellectual Output 1 – Activity 5 Course Types and Assessment Approaches







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OVERVIEW

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1. DEFINITION OF COMMON COURSE TYPES

Objective: Definition of common course types in higher education

| Name | Description | | | | | | |
|----------------------|---|--|--|--|--|--|--|
| Lectures | Lectures are large classes held by a professor. They cover well-organized, tightly constructed and highly polished presentations of methods and contents of a subject in consideration of specific problem formulations, formation of concepts and solution approaches. | | | | | | |
| Exercises | Exercises aim at deepening the student's knowledge in a specific subject by applying the methods of formal lectures on concrete examples and subsequent discussion. Students could be also grouped in smaller numbers and instructed by a supervisor. | | | | | | |
| Seminars | Seminars are courses in which students work with scientific/expert/professional theoretical methods on a topic. Participants are required to reflect on the achieved problem solution and participate in scientific discourse. Seminars are usually restricted to smaller groups of students to enable the active participation of each individual. | | | | | | |
| Projects | Projects aim at deepening the understanding of subdomains of a subject through working on solutions to experimental, numerical, theoretical or artistic tasks and assignments. | | | | | | |
| Laboratories | Laboratories are experimental activities conducted by (groups of) students under the guidance of a supervisor. They aim at making students acquainted with the handling of machines and materials and at introducing the experimental methods of a subject. The workplace and experimental establishment are provided by the educational institution. | | | | | | |
| Excursions | Excursions are courses that take place partly or fully outside the conventional place of study to deepen the contents of a course in a real-life experience (e.g. company visit). | | | | | | |
| Independent Study | Independent studies are undertaken by students with no or only little supervision. Students are tasked with researching specific topics, whereby the focus, delimitation, and depth depend on the students' assessment and interest. Independent studies focus on gaining research experience. | | | | | | |



Sources:

Center for Educational Innovation, Types of Lectures – Planning for Interactive Teaching and Learning, University of Minnesota, Retrieved May 25, 2021, from <u>https://oaa.osu.edu/sites/default/files/uploads/nfo/2019/Types-of-Lectures.pdf</u>

Bachelor's Programme Mechanical Engineering - Management, *Curriculum*, Technical University of Vienna, Retrieved May 27, 2021, from https://www.tuwien.at/fileadmin/Assets/dienstleister/studienabteilung/BSc_Studienplaene_20 21/Bachelorstudium_Wirtschaftsingenieurwesen_Maschinenbau_2021.pdf

2. DEFINITION OF COMMON ASSESSMENT APPROACHES

| Name | Name Description | | | | | | |
|---------------------------------|--|--|--|--|--|--|--|
| Written exam | Written tests are conducted by writing/drawing on paper or typing/drawing on a computer. | | | | | | |
| Open questions | The test candidate must answer a question using written text. The scope and depth of the answer is defined by the test candidate. | | | | | | |
| Multiple choice questions | The test candidate must select the correct answers from a list of predefined answers. This rubric includes single choice and true/false questions. | | | | | | |
| Drawings | The test candidate must draw an object or scene (e.g. CAD model). The drawing and the approach to the graphic implementation are evaluated. | | | | | | |
| Calculations | The test candidate must perform a calculation. Not only the result is evaluated, but also the calculation method. | | | | | | |
| Associations | The test candidate must put several given statements in context by correctly linking them. | | | | | | |
| Clozes | The test candidate must fill in the missing parts of a given statement or text. | | | | | | |

Objective: Definition of assessment approaches used in higher education



| Oral exam | Written tests are conducted orally between an examiner and one or several test candidate(s) | | |
|--|---|--|--|
| Open questions The test candidate must answer a question using free speech. T and depth of the answer are defined by the test candidate. | | | |
| Structured questionsOral execution of multiple choice questions, single choice quest True/False questions, associations or clozes. | | | |
| Discussions | Open conversation between the test candidate and the examiner in which the test subject is discussed. | | |
| Presentations | The test candidate must present research/scientific/professional results in front of an examiner or a group. | | |
| -) Case Study -) Protocol -) Reports -) Essays | The test candidate prepares a comprehensive document about a given topic, in which different aspects are discussed. Depending on the test subject, a wide variety of documents can be required for submission. The precise scope and depth of the document are defined by the test candidate. | | |
| -) Course participation -) Internships | The test candidate is assessed on the basis of their participation. | | |
| Demonstrators | The candidate develops a (technical) demonstrator and thus proves that the skills learned in the course can be applied in practice. | | |
| Take home exams | Modification of the written exam in which the test candidate can answer the exam over a longer period of time without supervision. | | |



3. DEFINITION OF LEVELS OF TECHNOLOGICAL SUPPORT

3.1. OVERVIEW

Objective: Definition of technology levels to characterize the digital support of courses.

| Name | Description |
|--|--|
| No technical support | Classic lessons without technical support. |
| Technology enhanced (< 25% online) | Classic lessons with minor technical support (e.g. PowerPoint). The lesson is not changed in its core and there is no reduction in the required presence. |
| Blended learning (25% to 75% online) | Combination of classic lessons with computer-aided learning and teaching (e.g. via the internet). Presence phases and e-learning phases alternate and complement each other. |
| Online learning (> 75% online) | Mostly computer-aided learning without physical presence. The online lessons are supported with sporadic physical lessons (e.g. assessment periods). |
| Fully virtual Classrooms (100% online) | The educators and students are only connected via digital media. The processing of the contents takes place exclusively via electronic means. |

Sources:

David O. McKay School of Education, *Blended Learning Initiative*, Brigham Young University, Retrieved May 21, 2021, from <u>https://sites.google.com/site/blendedlearninginitiative/session-1-blended-learning-overview-models/1-online#TOC-Online-Activity</u>



3.2. TECHNOLOGY LEVELS OF COMMON COURSE TYPES

Objective: Characterize possible lesson layouts with respect to different levels of technical support

| | No technical support | Technology enhanced (< 25% online) | Blended learning (25% to 75% online) | Online learning (> 75% online) | Fully virtual classrooms (100% online) |
|-----------|--|--|--|--|---|
| Lectures | Physical presentation of the learning content by an educator at a conventional place of study. No technical support is used to assist the lecture. | Frontal presentation of the learning content by an educator at a conventional place of study. The presentation of the contents is supported by technical aids with the aim of a better understandability (e.g. PowerPoint presentations, video examples, etc.). | Combination of frontal and virtual presentations. The selected approach depends on the learning content and is optimized for intelligibility. | The presentation of the content, the feedback of the students and other aspects are mostly digital. Physical presence only takes place if it cannot be replaced by digital means or if this leads to unjustifiable efforts. | The presentation of the content, the feedback of the students and other aspects are exclusively digital (e.g. live lectures, pre-recorded videos, online forums). |
| Exercises | Students are applying the methods of formal lectures on concrete | Students are applying the methods of formal lectures on concrete | Combination of physical and virtual exercises. The selected | Students are applying the methods of formal lectures on concrete | Students are applying the methods of formal lectures on concrete |













| | examples in a physical setting at a conventional place of study. No technical support is used to assist the exercise. | examples in a physical setting at a conventional place of study. Technical support is used, if it aids understandability (e.g. PowerPoint presentation of the results). | approach depends on the learning content and is optimized for intelligibility. | examples in a mostly virtual setting. Online collaboration tools are used to enable group work. Physical presence only takes place if it cannot be replaced by digital means or if this leads to unjustifiable efforts. | examples in a fully virtual classroom setting. Online collaboration tools are used to enable group work. |
|----------|---|--|---|--|--|
| Seminars | Students participate in student work with scientific methods in a physical setting at a conventional place of study. No technical support is used to assist the seminar. | Students participate in student work with scientific methods in a physical setting at a conventional place of study. Technical support is used, if it aids understandability (e.g. PowerPoint presentation of the topic and examples). | Combination of physical and virtual exercises. The selected approach depends on the learning content and the interaction type, and is optimized for intelligibility. | Students participate in student work with scientific methods in a mostly virtual setting. Online collaboration tools are used to enable group work. Physical presence only takes place if it cannot be replaced by digital means or if this leads to unjustifiable efforts. | Students participate in student work with scientific methods in a fully virtual setting. Online collaboration tools are used to enable group work. |
| Projects | Students work on solutions to experimental, | Students work on solutions to experimental, | Combination of physical and virtual project work. The | Students work on solutions to experimental, | Students work on solutions to experimental, |

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| | numerical, theoretical or artistic tasks in a physical setting at a conventional place of study. No technical support is used to assist the project. | numerical, theoretical or artistic tasks in a physical setting at a conventional place of study. Technical support is used, if it aids understandability (e.g. PowerPoint presentation of the topic, examples or the results). | selected approach depends on the learning content and the interaction type, and is optimized for intelligibility. | numerical, theoretical or artistic tasks in a mostly virtual setting. Online collaboration tools are used to enable group work. Physical presence only takes place if it cannot be replaced by digital means or if this leads to unjustifiable efforts. | numerical, theoretical or artistic tasks in a fully virtual setting. Online collaboration tools are used to enable group work. Physical presence |
|--------------|---|---|---|---|--|
| Laboratories | Students perform experimental exercises under the guidance of a supervisor in a physical setting at a conventional place of study. No technical support is used to assist the laboratory. | Students perform experimental exercises under the guidance of a supervisor in a physical setting at a conventional place of study. Technical support is used, if it aids carrying out the laboratory or the content's understandability (e.g. online registration). | Combination of physical and virtual experiments. The selected approach depends on the structure of the laboratory and is optimized for intelligibility. | Students perform experimental exercises under the guidance of a supervisor in a mostly virtual setting. Online access and collaboration tools to enable access to the laboratories. If needed, online collaboration tools are used to enable group work. Physical presence only takes place if it cannot be replaced by digital | Students perform experimental exercises under the guidance of a supervisor in a fully virtual setting. Online access and collaboration tools to enable access to the laboratories. If needed, online collaboration tools are used to enable group work. |



| | | | | means or if this leads to unjustifiable efforts. | |
|----------------------|--|--|---|---|---|
| Excursions | Students deepen the contents of a course outside the conventional place of study without technical support. | Students deepen the contents of a course outside the conventional place of study. Technical support is used, if it aids carrying out the excursion (e.g. online registration). | Combination of physical and virtual excursion. The selected approach depends on the content of the excursion and is optimized for intelligibility. | Students attend the excursion or in a mostly virtual setting (e.g. virtual plant tour). Online presentation and collaboration tools are used to get a realistic experience. Physical presence only takes place if it cannot be replaced by digital means or if this leads to unjustifiable efforts. | Students attend the excursion or in a fully virtual setting (e.g. virtual plant tour). Online presentation and collaboration tools are used to get a realistic experience. |
| Independent Study | Students perform independent studies at a conventional place of study without technical support. | Students perform independent studies at a conventional place of study.Technical support is used, if it aids carrying out the study. | Combination of physical and virtual study. The selected approach depends on the content. | Students perform independent studies in a mostly virtual setting. Physical presence only takes place if it furthers the study. | Students perform independent studies in a fully virtual setting. |



3.3. C-3: TECHNOLOGY LEVELS OF COMMON ASSESSMENT APPROACHES

Objective: Characterize possible assessment layouts with respect to different levels of technical support

| | No technical support | Technology enhanced (< 25% online) | Blended learning (25% to 75% online) | Online learning (> 75% online) | Fully virtual classrooms (100% online) |
|--------------|---|---|--|---|---|
| Written exam | Traditional "paper- based" assessment that is performed at a conventional place of study. No technical support is used or allowed during the assessment. | Traditional "paper- based" assessment that is performed at a conventional place of study. Technical support is used, if it aids in carrying out the assessment (e.g. registration, grading) | Combination of physical and virtual assessment. The selected approach depends on the content, the assessment type and their suitability for a virtual execution. | Mostly online assessment with physical aspects like performing the assessment at a conventional place of study. Virtual tools (e.g. learning platforms) are used for the assessment. | Fully online assessment. Virtual tools (e.g. learning platforms) are used for the assessment. |
| Oral exam | Oral assessment is performed face to face at a conventional place of study. No technical support is used or | Oral assessment is performed face to face at a conventional place of study. Technical support is used, if it | Combinationofphysicalandvirtualassessment.Theselectedapproachdependsonthe | Mostly online assessment with physical aspects like performing the assessment at a | Fully online assessment. Virtual tools (e.g. online meeting tools) are used |

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| | allowed during the assessment. | aids carrying out the excursion (e.g. registration, grading) | content, the assessment type and their suitability for a virtual execution. | conventional place of study. Virtual tools (e.g. online meeting tools) are used for the assessment. | for the assessment. |
|---|--|---|--|---|---|
| -) Case Study -) Protocol -) Reports -) Essays | "Paper-based" assessment. No technical support is used during its creation. | "Paper-based" assessment. Technical support is used during its creation (e.g. PDF) or its submission. | Combination of a "paper-based" and a virtual assessment. | Mostly online assessment. Virtual tools are used for the creation, submission and grading. | Fully online assessment. Virtual tools are used for the creation, submission and grading. |
| -) Course participation -) Internships | e Assessment is based on participation. The assessment's technology level depends on the technology level of the underlying subject. | | | | nology level of the |
| Demonstrators | Assessment is based technology level of tech | on a demonstrator. The of the demonstrator. The prinology level of the unde | lemonstrator-related tech resentation-related techno rlying subject (e.g. physic | nology level of the assess ology level of the assessm cal versus online classroo | sment depends on the nent depends on the om). |
| Take home exams | "Paper-based" assessment. No technical support is used during its | "Paper-based" assessment. Technical support is used during its creation (e.g. PDF) | Combination of a "paper-based" and a virtual assessment. | Mostly online assessment. Virtual tools are used for the creation, submission | Fully online assessment. Virtual tools are used for the creation, submission |



| | creation. | or its submission. | | and grading. | and grading. |
|--|-----------|--------------------|--|--------------|--------------|
|--|-----------|--------------------|--|--------------|--------------|