European Training Manual for Transferable Skills in SET Disciplines

Training the mindSET –

Improving and Internationalizing Skills Trainings for Doctoral Candidates

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I Introduction

I.1 Mandate

This handbook introduces the mindSET European Training Manual for Transferable Skills in Science, Engineering and Technology (SET) Disciplines presenting greater detail on the courses outlined in the European Core Curriculum in Transferable Skills for PhD candidates in SET disciplines. Both are ready to be used and implemented at Universities of Science and Technology (TUs) across Europe. The curriculum, on which this manual is based, was developed by the international project team of "Training the mindSET – Improving and Internationalizing Skills Trainings for Doctoral Candidates". It aims at preparing SET PhD candidates for diverse professional contexts, inside as well as outside academia. By translating the growing transferable skills and competence demands of different employment markets into mindSET's curriculum in the most effective way possible, it has been designed to support SET PhD candidates during their qualification phase and to enhance their employability across Europe.

mindSET's motivation to commit to transferable skills education lies in the growing importance of these skills for the professional success of doctoral students. The European Core Curriculum in Transferable Skills responds to the training needs demands of SET PhD candidates and to the requirements of employers. Our research has led to the identification of clear competence demands with regard to distinct career paths and fields of employment. Hence, SET doctoral students need to acquire an extensive range of transferable skills and competences to prepare themselves for diverse career options. As well as in the academia sphere, SET PhD candidates become "important actors in industry and other public and private sectors as well as entrepreneurs or leaders and 'intrapreneurs' in industry, government and other sectors."[1]

To achieve this goal, the modules of the European Core Curriculum, each addressing a specific competence area, are translated into courses that can be implemented by universities in Europe and beyond. These competence areas are:

I. research ethics and good scientific practice
II. acquiring third-party funds and projects
III. project management
IV. cooperation, communication and presentation
V. leadership and management
VI. publication and promotion
VII. innovation and entrepreneurial thinking
VIII. teaching methods.[2]

We have designed the manual and run two circles of pilot and consolidation trainings at all partner universities. The results of these trainings have been fed back to adjust and further develop the training material. By doing so, it also had impact on the mindSET European Core Curriculum in Transferable Skills as both parts of the handbook are tightly interwoven.

[1] CESAER et al. (2015), p. 6; cf. Wissenschaftsrat (2014), p. 21.

[2] The competence areas are displayed here as they appear in the curriculum (chapter V). For a ranking of the competence areas most sought after according to the mindSET European Transferable Skills Training Demands Survey, see chapter III.3 of the curriculum.

What are transferable skills?

The term "transferable skill" refers to generic professional competences that can apply to a wide variety of professional settings. "Transferable skills are skills learned in one context that are useful for another. They can serve as a bridge from study to work and from one career to another as they enable subject- and research-related skills to be applied and developed effectively in different work environments."[3] Transferable skills can be applied to almost any job, industry or career path, whether academic or non-academic. Individuals take transferable – portable – skills literally with them and transfer these to different positions, companies and institutions.

In many contexts, transferable skills are also called "generic skills", "transversal competences", "professional skills" or – most importantly – "soft skills". The term "soft skill" refers to all general and cross-disciplinary competences. In contrast to hard skills that may be specific to an occupation, soft skills comprise a set of core skills and abilities that are relevant and useful across different areas of life: socially, professionally and in education, for instance. Examples are time management, teamwork, communication, independent working, reliability, creativity or capacity for innovation. Soft skills are commonly split into

- social competences, e.g. willingness to cooperate, address conflict, tolerance, politeness
- personal competences, e.g. motivation, readiness to take on responsibility, flexibility, perseverance
- methodological competences, e.g. application of learning and working methods, presentation skills, planning and organisational skills and conceptual skills.

Alongside specialist or "hard" skills, these four types of competence make up a full occupational and professional performance capability. Those individuals who perform in an appropriate, sophisticated and responsible manner are considered to be competent and professionally capable. It is not only about possessing knowledge – decisiveness, for a competent person, is the ability to reasonably and effectively apply knowledge to practice.

Transferable or soft skills are recognised as being extremely important for success in life in general and for success in one's professional life in particular. This also applies for SET PhD candidates and their career paths. Transferable skills are not only essential for coping with challenges connected to their dissertations or to their first steps on the occupational ladder, but also for pursuing medium- and long-term career ambitions strategically, for advancing in their chosen careers and thriving in new roles. Transferable skills combined with original research skills can increase employability and enable people with these skills to take different career paths, thus widening their options in the academic, governmental and private-sector spheres.

Which specific skills become most vital for individuals to have depends on several factors: aside from individual career aspirations, certain overarching conditions and global developments as well as the trends and demands of job markets play a major role.

[3] Eurodoc (2018), p.6.

I.2 Target groups & Beneficiaries

Primary Target Group: Higher Education Facilities

mindSET's European Training Manual for Transferable Skills in SET Disciplines is primarily targeted at teaching and training staff in higher education facilities who are responsible for inculcating transferable skills in researchers. They may use the Training Manual…

- to better understand the importance of transferable skills,
- to gain an overview of relevant transferable skills in SET disciplines,
- to be provided with comprehensive material for the training of around 40 transferable skills within eight competence areas,
- to build up this training material and to develop and implement courses for transferable skills at their universities, as part of their further education programme for PhD candidates and, if necessary, to tailor courses to their own needs and conditions,
- to develop or broaden transferable skills training at their universities and to provide worthwhile and appealing training programmes to researchers.

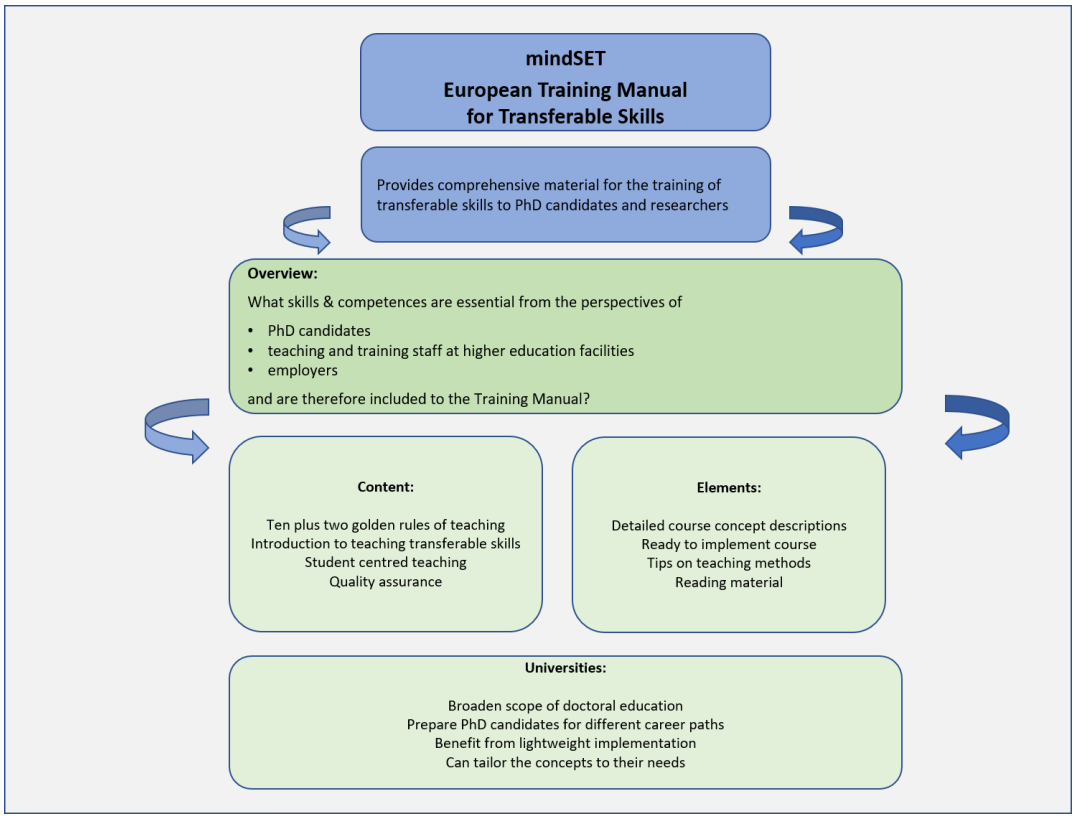

Figure 1: How universities benefit from mindSET's European Training Manual for Transferable Skills for SET Disciplines. Source: mindSET.

Beneficiaries: SET PhD candidates, first stage researchers (R1) and established researchers (R2-R4)

There are further beneficiaries of the European Training Manual for Transferable Skills. In the first place are the people who actually receive training in transferable skills. First and foremost, the mindSET curriculum targets at the competence development of SET PhD candidates or first stage researchers

(R1).[4] They may benefit from training courses and programmes in transferable skills that get implemented at universities inspired by the European Training Manual. Based on the training they receive they may better cope with versatile challenges connected to their dissertation as well as their current and future job position, whether it is within or outside academia.

Benefits are not limited to first stage researchers, because learning gains and strengthening of skills have a long-term impact and can naturally be applied at more advanced career stages. Additionally, recognised and established researchers (R2-R4) at the post doctoral level and beyond may equally profit from transferable skills trainings if they need to further hone and strengthen these skills.

The greatest benefits from transferable skills training arise in transition periods – phases when individuals take the step from one qualification or job position to the next, for example from Master's to PhD, from their PhD studies to the post doctorate level or to employment in industry. Individuals may then find themselves suddenly confronted with a variety of expectations and demands. Here, the mindSET European Training Manual for Transferable Skills lays the groundwork for the qualification boost that should help them thrive in their new roles.

Figure 2 portrays how PhD candidates are expected to benefit from mindSET's European Training Manual for Transferable Skills for SET Disciplines.

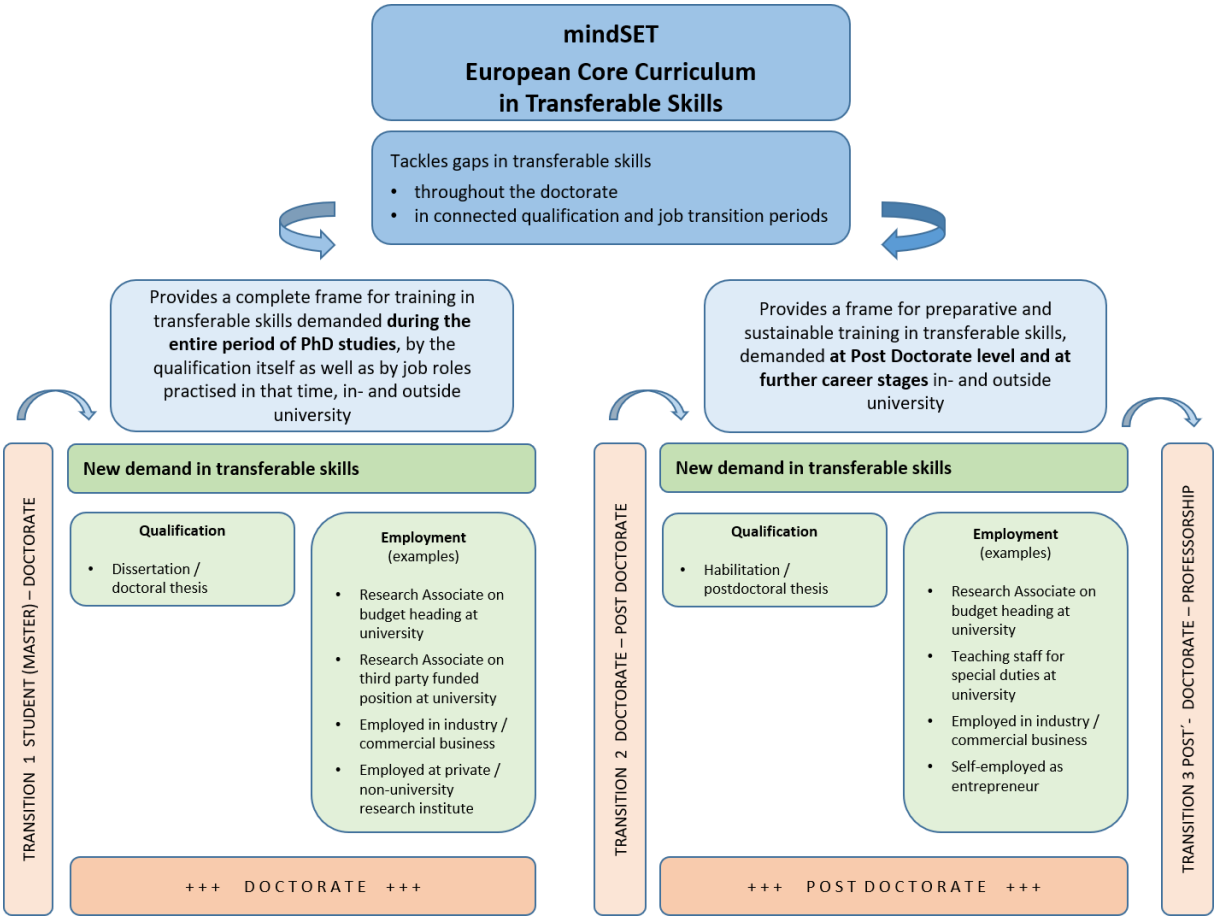

Figure 2: How PhD candidates benefit from mindSET's European Training Manual for Transferable Skills for SET Disciplines. Source: mindSET.

[4] Research profiles: First Stage Researcher (R1), Recognised Researcher (R2) and Established Researcher (R3, R4); see also https://euraxess.ec.europa.eu/.

Beneficiaries: Employers & Employment Market

Employers – whether universities or non-academic entities – also constitute a group of beneficiaries. Various studies indicate that the importance of transferable skills has grown considerably during the last decades and is most likely to grow further in the future. Some transferable skills have, in fact, never been demanded by the job market as much as nowadays. Across occupations at all levels and regardless which career path is chosen, employers emphasise the needs of generic skills.

Those skills demands derive largely from changes in the world of work. Megatrends such as rapid technological change, digitalisation and internationalisation as well as growing levels in project-based work, working in networks and in multidisciplinary teams, new team constellations and leadership26, raising degrees of work complexity and intensification with more complex products and services, increasing levels of responsibilities and coordination, intensified communication and needs for cooperation–all these factors have led to a significant shift of competence requirements.

In the changed world of work and under new frame conditions of the employment market, many transferable skills are not only valued more than in the past, but often perceived to be even more relevant than certain hard skills.[5] Thus, employees who aside from proficient hard skills possess relevant transferable skills are simply better prepared for their job roles and tend to occupy their positions more successfully than employees who build their careers largely on the basis of hard skills.

It is one of the Training Manual's major objectives to contribute to the skills match between young researchers and different labour markets. Teaching and training staff at universities as direct target group of the Training Manual overtake the role of facilitators and convey relevant knowledge – that finally grows to transferable skills and competences of PhD candidates and researchers who apply these to the practice of an employment environment.

I.3 Development / Foundation of the mindSET European Training Manual in Transferable Skills

Development/Foundation

To better understand the needs of the target group, a survey among the PhD candidates of the partner universities has been conducted, revealing the competencies the early-stage researchers are striving for. These have then been clustered to eight competence areas, each represented by one module in the European Core Curriculum in Transferable Skills[6].

The curriculum is the basis for the courses presented in this manual. Each module has been split into several courses, covering different topics and aiming at fostering various skills. Figure 3 displays the

[5] For more detail on skills demands on employment markets, please see "mindSET European Transferable Skills Training Demands Survey –Analysis Report, p. 18 ff. http://www.mindset-project.eu/wp-content/uploads/2019/12/mindSET-European-Transferable-Skills-Training-Demands-Survey-Analysis-Report-final.pdf

[6] For further information on the development of the curriculum, please see "mindSET European Core Curriculum in Transferable Skills for SET Disciplines", p. 10f. http://www.mindset-project.eu/wp-content/uploads/2019/12/mindSET_European_Core_Curriculum_in_Transferable_Skills_for_SET_Disciplines_final.pdf

overview of the contents of the curriculum, figure 4 presents greater detail of the topics in the modules.

Nr.	Modules / Courses	Number of courses	ECTS points (recommended)
0	Research Methods and Career Planning	2	2
I	Research Ethics and Good Scientific Practice	5	10
II	Acquiring Third-party Funds and Projects	4	5
III	Project Management	6	7
IV	Cooperation, Communication and Presentation	4	4
V	Leadership and Management	6	10
VI	Publication and Promotion	4	4,5
VII	Innovation and Entrepreneurial Thinking	5	7,5
VIII	Teaching Methods	5	8
Total		50	58

Figure 3: Overview of contents of mindSET's European Core Curriculum in Transferable Skills. Source: mindSET.

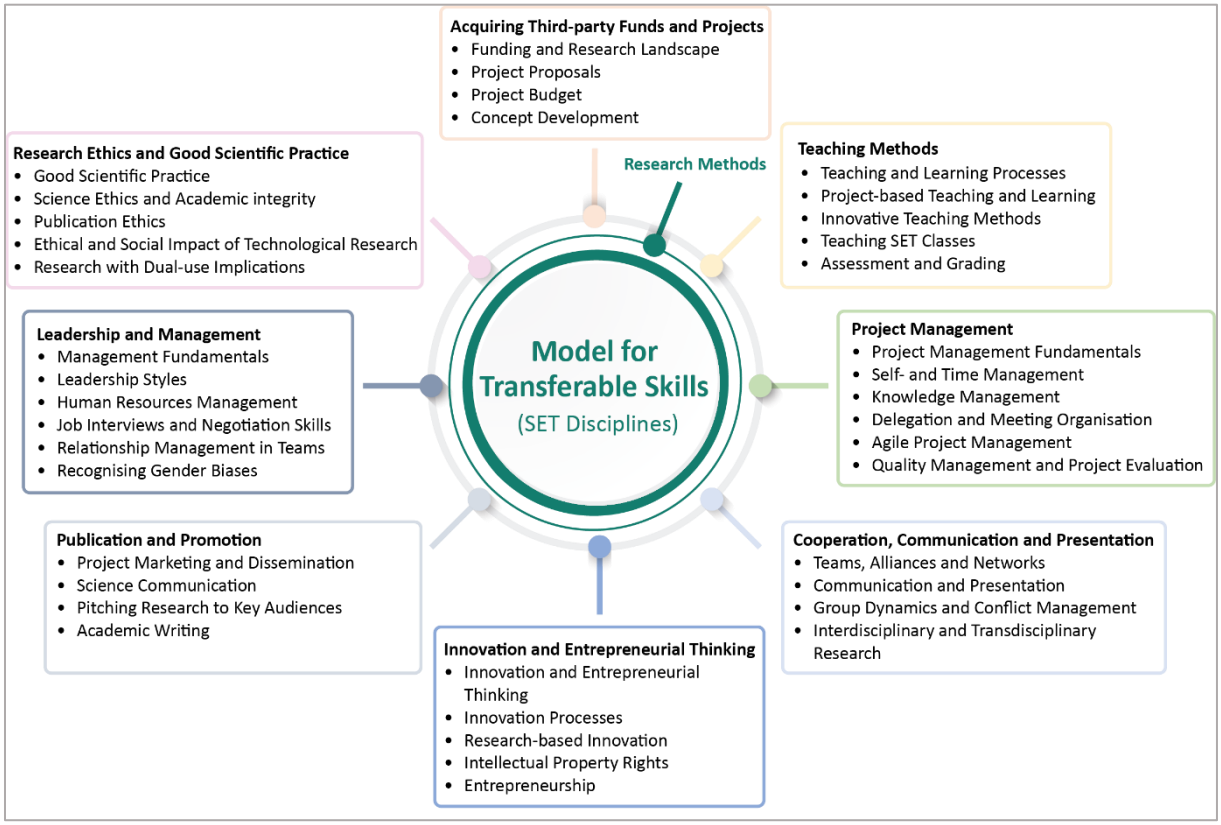

Figure 4: mindSET's European Core Curriculum in Transferable Skills. Source: mindSET.

The following descriptions highlight some of the competence areas that are fostered in the modules; for further information, please consult the respective course outlines.

The introductory module Research Methods and Career Planning aims at equipping PhD candidates with basic competencies in different research methods and gives an overview of different career paths. The PhD candidates are enabled to apply said methods and frameworks to their own research and to recognize their own strengths and skills.

The module Research Ethics and Good Scientific Practice covers the methods and ethical frameworks researchers and PhD candidates are applying in their research. Participants gain an understanding of ethical issues and sharpen their ability of reasoning and judging ethically.

Acquiring Third-party Funds and Projects deals with the steps, concepts, and methods that are necessary for writing compelling research proposals. The PhD candidates know the criteria for high quality proposals and learn how to overcome writers' blockades through creative techniques.

Project Management fosters, beside others, the skills time management, delegation, and moderation of meetings. The participants learn to apply these skills in research projects in order to make their own project succeed.

The fourth module Cooperation, Communication and Presentation enables the PhD candidates to understand the processes of group dynamics and to use this knowledge for their everyday life, may they be members or leaders of teams. They learn how to present their research and how to motivate others by the means of communication. After the module, participants know methods to promote successful cooperation.

The module Leadership and Management guides PhD candidates to become aware of the disadvantages and advantages of different leadership styles as well as how and when to apply which style. In addition, the participants are capable of recognising biases with regards to gender and are familiar with methods of avoiding them by the means of rational thinking.

Publication and Promotion aims at the very core of research – sharing your results and findings with others, be they experts or the general public, to further knowledge. Participants know how to address different target groups accordingly, supported by visual and other media. They understand the importance of a dissemination strategy for their own research and how their project can benefit from exchange with peers and non-experts.

Within the module Innovation and Entrepreneurial Thinking, PhD candidates are enabled to tell knowledge and intellectual asset apart and to discern situations where they might violate intellectual property rights. They acquire the skills and competences for becoming an entrepreneur, such as developing innovative ideas, writing business plans and performing risk analyses, and know how to apply for funding.

Teaching Methods provides PhD candidates with the understanding of learning processes and different teaching methods that allow for students to acquire and promote skills. The participants are made aware of the benefits of student-centred learning activities and learn how to integrate these into their own teaching.

As mentioned above, we have run pilot testing for some of the courses. The feedback and the experiences gathered throughout the pilot phase made us change some aspects of the course outlines to better meet the needs of the PhD candidates. The re-worked concepts have then been tested again, leading to the final consolidation of the concept. The outlines for the courses that have not been tested

are based on the experiences from other thematically close workshops conducted at the institutes for continuing or doctoral education across the partner universities. They have been thoroughly checked by pedagogic and other experts whose feedback was used to improve our concepts.

I.4 User Instructions

Due to its detailed course outlines and hence lightweight implementation, the European Training Manual for Transferable Skills in SET Disciplines is potentially of interest and applicable for all Technical Universities in Europe and even beyond. Each institution interested in promoting its doctoral education can easily establish the courses presented in this manual and adapt them to its own needs. The course outlines are based on our experiences and allow for an easy adjusting. They serve as a resource for training the trainers, since those are essential for the development of transferable skills in PhD candidates.

For this reason, we provide material for the trainers. Each outline displays the methods and material we deem useful, gives tips for the conduction of the course (on site, online, blended learning, flipped classroom et cetera) and indicates the learning outcomes in accordance with the European Qualification Framework. The PhD candidates benefit most from student-centred learning activities that respect the way adults learn and from trainers who are experts in both the topic and the didactics. Still, the outlines can also be used by trainers who mastered the topic but may have lacked the confidence to give classes on it, as they can avail themselves of the schedule and methods presented.

We also took into account the scalability of the courses. In general, we assumed a figure of up to 16 participants as basis for our course outlines; but ever so often, the demand is higher so that trainers are likely to stand in front of more participants than intended or recommended. We provide information on how to adjust the number of members in small group exercises and the time accordingly to make sure that all participants meet the desired learning outcomes. This can be done for instance by preparing assignments for the PhD candidates that are to be delivered from home or before the course, such as, e.g., reading assignments and preparatory questions. All the alternatives presented allow greater flexibility.

In addition to this manual and the European Core Curriculum in Transferable Skills, we have developed a coaching manual[7], targeting everyone involved in doctoral education, including supervisors, administrative staff and trainers, and a competence (self-)assessment tool. The latter is bifold: First, PhD candidates can answer a questionnaire and receive recommendations as to which module or course to attend and to keep track of their progress, provided they fill it in on a yearly basis. Second, universities can use the results of the questionnaires to check if their doctoral education meets the needs of their doctoral candidates or if they have to establish new courses. The competence self-assessment tool can be tested at: https://forms.gle/igYFsCeAGiJqGVtN6 and downloaded at http://www.mindset-project.eu/results/self-assessment/.

[7] Please see http://www.mindset-project.eu/results/webinars/ for the tutorial and http://www.mindset-project.eu/results/coaching-manual/ for the coaching manual

II. Ten (plus two) Golden Rules of Teaching Transferable Skills

Take time to create a catchy title for your course.

Make sure the title will attract learners and provide information about the course content. You can also put some further information into a subtitle.

Imagine work situations that might serve as an example to learn from.

A case study or a story will enrich the learning process. It activates the personal experience of your participants and makes learning more meaningful.

Set learning objectives centered around skills that are needed to solve problems described in work situations.

Focusing on goals will motivate the learners and direct the learning process. Keep the goals simple and achievable so that participants will feel comfortable with their own performance.

Use the 'Cycle of Complete Action' as a selection criterion for your teaching methods.

The more you connect learning to real-world work situations the better. If participants plan, execute, and evaluate their professional actions, they will internalize an approach that can easily be transferred to subsequent challenges in their careers. Give the learner a concrete experience that is grounded in the real workaday world from which you can extrapolate theories and concepts.

Provide orientation. Allow exploration. Ensure the learning outcomes.

The learning process can be understood through the lens of the three didactical phases. In the beginning, your learners need orientation with regard to the social and organizational context of the course. Once oriented, they can explore the new information and work with it. Finally, guide them to a realization of their increased knowledge and ensure that it is sustainable by showing them how they can transfer it into practice.

Know what your learners expect to learn.

Unfulfilled expectations are a common source of dissatisfaction. If possible, conduct a survey well before teaching the course to find out what learners expect from your course. Compare their expectations with your plans and possibilities. If you think it makes sense and is feasible, slightly modify your course structure and integrate some new content into it. In any case, clearly communicate which expectations will not be fulfilled, thus giving the learners a chance to rethink whether they want to take the course or not. Also, ask them what they are willing to contribute. Your learners' motivation is an important factor for success. Share responsibility with them. Otherwise, you will risk wasting time – both theirs and yours.

Know your learners.

The survey will also help you get to know your learners: What is their prior knowledge? What technical terms will you be able to use? What are their interests and motivations? Every group of learners will create a new teaching experience.

Know your lesson and be flexible.

Know the lesson that you are about to teach, and clearly identify its learning objectives. Think of more than one way to reach these goals with your learners. Then, be flexible in choosing your approach, and keep checking to make sure that the approach you have chosen is the best one. And… relax. Not every aspect of your plans may work out the way you intended. It is more important to keep the dialogue with your participants open than to forcefully fulfill your every objective. Have fun!

Course material, visualization and media support

Prepare any course material in advance and keep some back-up material that you probably will not need so that you are ready for any unexpected changes. Visual aids and the use of a range of media are important for long-term effectiveness. It has proved useful to have a digital space where you can put resources that are accessible to the learners around the clock. It will also give you the peace of mind that not all questions need to be answered ad-hoc during class hours.

Breaks

Plan enough breaks, at least every 90 minutes, that allow for real brain breaks. Switch between shorter and longer breaks, like a lunch or a coffee break, depending on the time of day. Breaks are one of the most efficient teaching methods! Use them wisely. Also, do not forget about yourself. You are your own most important tool, so take good care of yourself.

Share your success.

Wrap up the course by sending the course documentation to the participants. This may include presentations, surveys conducted over the duration of the course, photographic records or a list of lessons learned. Make sure to have your learners evaluate your course to find out what worked well for them or where there is still room for improvement. Give your participants the opportunity to evaluate your efforts. If they have criticism, ask them for ideas on how to improve your course. Invite them to be co-designers of the shared success of your teaching and their learning. Be open to learning from your learners, and resist the urge to take harsh criticism too personally.

III. Introduction to Teaching Transferable Skills

In this chapter, you will learn more about competencies and the specific topic of core competencies, learn about guidance for formulating the learning objectives of your course, discover a model with which to better understand learning processes, ask yourself specific questions about creating your course, and think about the right choice of methods to achieve your teaching objectives.

III.1 What empowers us to act?

This question is central when thinking about the design of your course on core competencies. For, what good is knowledge if it fails to enable action?

To make action possible, knowledge must be set in motion. The first movement is out of the books and into the minds, hearts, and hands of learners. From there, the movement is into practice on the job, and then, ideally, back into books.

To facilitate this transfer, you need learning architectures that are tailored to your participants, the topic, the context and, last but not least, yourself.

Weinert defines competencies as "the cognitive abilities and skills available to or learned by individuals to solve specific problems, as well as the associated motivational, volitional, and social aptitudes and skills to apply the solutions to problems successfully and responsibly in a variety of situations." (Weinert 2001, p. 27f.).

In this definition, the objective is understood in relation to the learner. Weinert breaks down competency into components so that it can be operationalized with regard to learning arrangements – that is, to make it transferrable to concrete courses. In this context, it is important to recognize the relevance of will and willingness to cooperate, which set skills and abilities in motion. The learning arrangement can be excellent, but if the participants do not want to learn and shy away from participation, it will not result in success. The goal is to solve problems that arise in different professional situations.

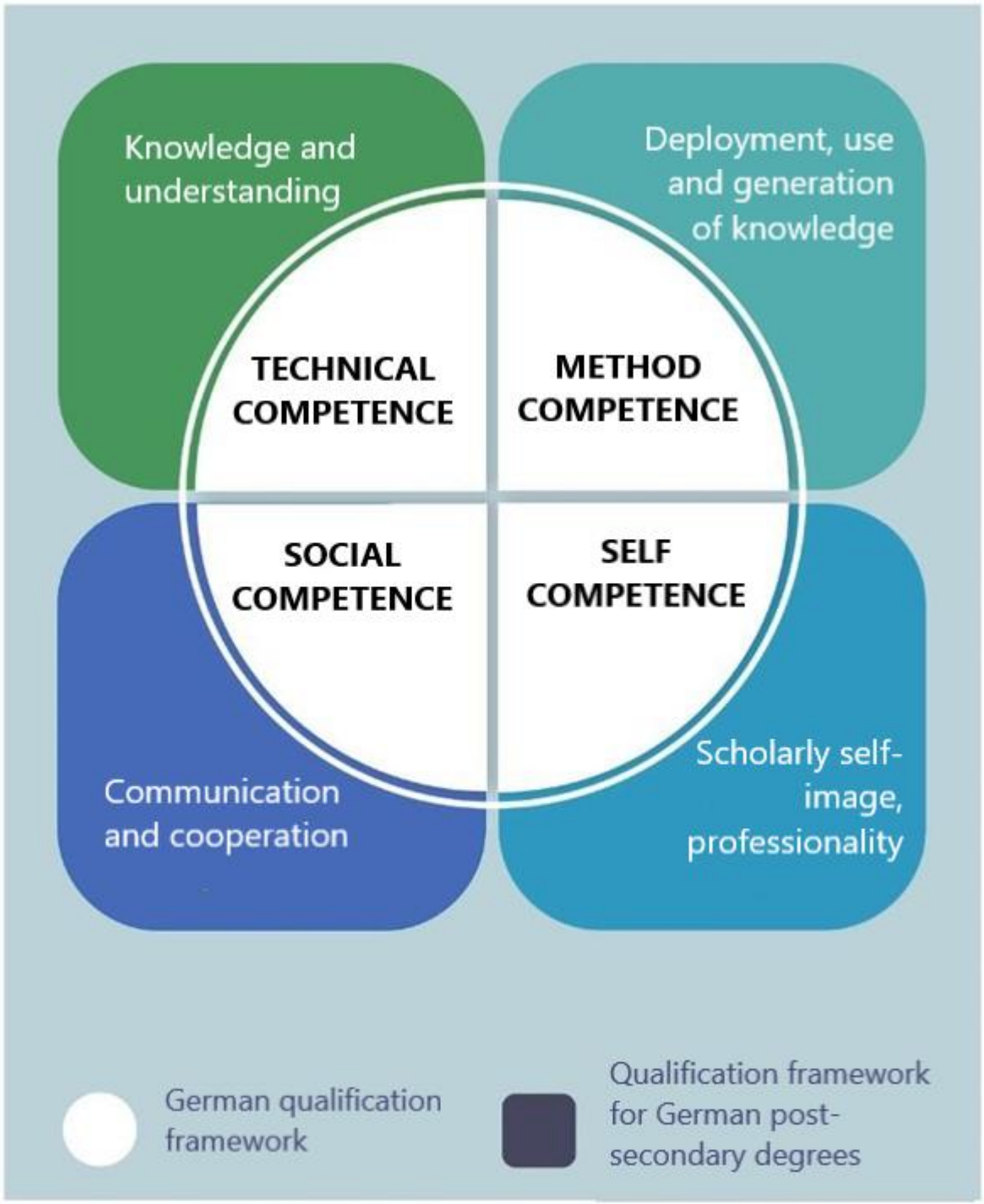

Figure 5: German Qualification Framework/Qualification Framework for German post-secondary degrees
Source: Hoffmann, Kiehne, 2018, p.4.

Ask yourself: What do I want my participants to know, to be able to do; and what should they have experienced by the end of my course? The higher education qualifications framework can help you with this by describing target dimensions of learning.

In this context, the increase in competence not only aims at acquired specialized knowledge, but also at skills, methods and tools as well as the development of a self-image with regard to professional tasks.

An example formulation:

Participants know of 5 EU funding programs in their field of research.
Participants can use a template to submit an application.
Participants have discovered that brainstorming in a group produces more ideas.

But what exactly are the core competencies, and what distinguishes them from the learning objectives university teaching aims to achieve?

“Transferable skills are skills learned in one context that are useful in another. They can serve as a bridge from study to work and from one career to another as they enable subject- and research-related skills to be applied and developed effectively in different work environments.” Eurodoc (2018), p. 6.

What distinguishes competencies from core competencies, then, is transferability. At the same time, it is important to be aware that it is always the same person taking action. Despite the understandable wish to delineate the various dimensions of competence from one another and break them down into their component parts, in the end, people have to synthesize all of them in order to be effective. We therefore want to motivate you to use the competencies as a guide but not to interpret them as dogma. The concepts offered here are theoretical constructs and merely represent complex reality in a simplified form. Yet, this is precisely their strength as well. For, by simplifying complexity through models, they can help you to align your teaching approach. Furthermore, these concepts allow us to discuss and debate about didactic activity by offering categories under which a wide range of experiences can be subsumed. Despite this quality of concepts that help bring order to such a disorderly human phenomena as learning, your participants are not machines that you can give orders to – and that is a good thing. Our capacity for disorderliness creates space for creativity and real learning that evolves between the subject matter, the instructors, and the learners within the classroom environment.

III.2 Learning and teaching – a simple model

To better understand learning processes, we would like to present a simple model here before we move on to the conceptual work of designing your course.

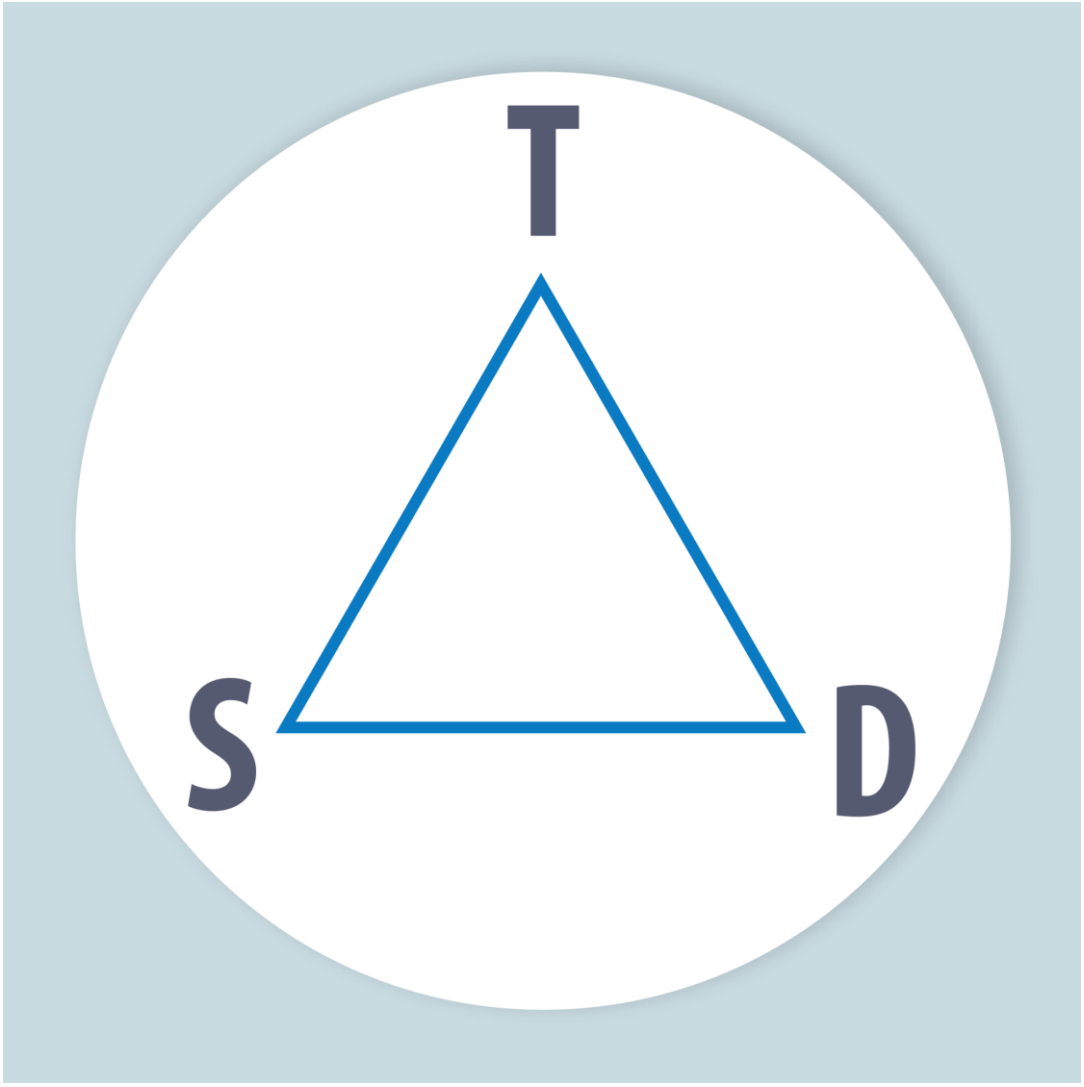

Figure 6: Contact model.
Source: Hoffmann, Kiehne, 2018, p.1.

The contact model was so named by its authors Böss-Ostendorf, Senft (2011) because it refers to the fact that your learners have to establish their own contact to the topic of your course as distinct from your own approach to the subject. At the same time, it allows you to design your course in such a way that the learners can establish contact with the topic. Whether this then develops into a relationship is only partly in your hands, but is determined by motivational aspects of the learners, among other things.

Context

What is the setting for your course? Is there adequate time, space, light, media and internet? All of this has an impact on the learning process.

The subject matter may be familiar to you, but participants will first need to establish their own contact with it in order to feel interest and relevance.

How about you, can you identify with the topic and persuasively convey it to the learners? If not, try to establish your own personal contact with the content.

III.3 Using a checklist to develop the course

Here is a checklist to help you flesh out your course by asking questions. It is based on the contact model, which it supplements with questions about digital modes of learning.

Topic/content

What should be presented/what should be worked on?
Identification of the topic or issue to be addressed: What is it all about?
What is interesting about it, what is worth knowing?
What is the current state of research?
What questions are currently under discussion?
What has been written on the subject?
How does the content relate to me?
What am I particularly interested in?
What excites me about the topic? What would I like to experience or learn for myself?
What is my own experience/specialized knowledge?
What prior experience, subject knowledge, skills and abilities can I bring to the table as an instructor?
What are my difficulties, knowledge gaps, emotional reservations in relation to the topic?

Target groups

Who is the target audience?
Which specific person(s) come to mind?
What is the life situation and everyday life of the target group? (characteristics)
What is the possible value of the course in the current stage of their career?
What are the learners' reference points (interests, concepts, prejudices)?
What difficulties – or deficits, where appropriate – are learners grappling with?
What specific issues are they concerned with?
What are their learning needs in relation to these issues?
What skills and previous experience do they bring to the table – from internships and work experience, for instance?
Which activities (content/topics) arise from the considerations regarding the target group?

Conditions

What are the external conditions?
What needs to be considered with regard to the number of participants, allotted time, time of day, room and its equipment, digital infrastructure, seating arrangements, and so forth?
Which of these technical-organizational parameters are fixed? Which ones can you influence – by purchasing software, for example?

Goals

What do I want to accomplish? Have I developed teaching objectives in terms of a specific target group, precisely defined content and the existing conditions?
What do you want learners to know, be able to do or experience by the end of the course?
Control: Are the target formulations concrete and realistic, i.e. are the objectives achievable?

Methods

How exactly do I want to proceed? What is possible? What ways can I think of to accomplish the objectives? What kinds of pathways might help learners make their own discoveries?

Harmonizing objectives/contents/methods

What is the context?
Elements suitable for the specific course are filtered out of ideas: Which methods could help to achieve the objective?
What "common thread" emerges as a design idea for the course as a whole?

Digital Dramaturgy

How much synchronous and asynchronous learning time am I planning?
How do I design the self-study times?
How do I want to provide guidance?
How do I initiate collaboration among learners?
Which learning platform will I use?
What digital tools (such as Padlet) do I want to use?

Dialogue-based elements of the course

How will I solicit student feedback and use it to shape the course?

Feedback, testing and evaluation

How do I give feedback on my students' learning processes and products?
How can I design testing of the acquired competencies?
How do I design the overall assessment and what will I do with the results?

As you work through this list of questions, what do you want to achieve, and how will it come into sharper focus.

III.4 Back to the topic at hand

Topics are predetermined by the Training the mindSET curriculum. Now, it is up to you breathe life into them, which means that you will have to think of ways to establish contact that will help the participants to develop a living relationship with your topic.[8]

For your reference, here again are the topics of the mindSET program:

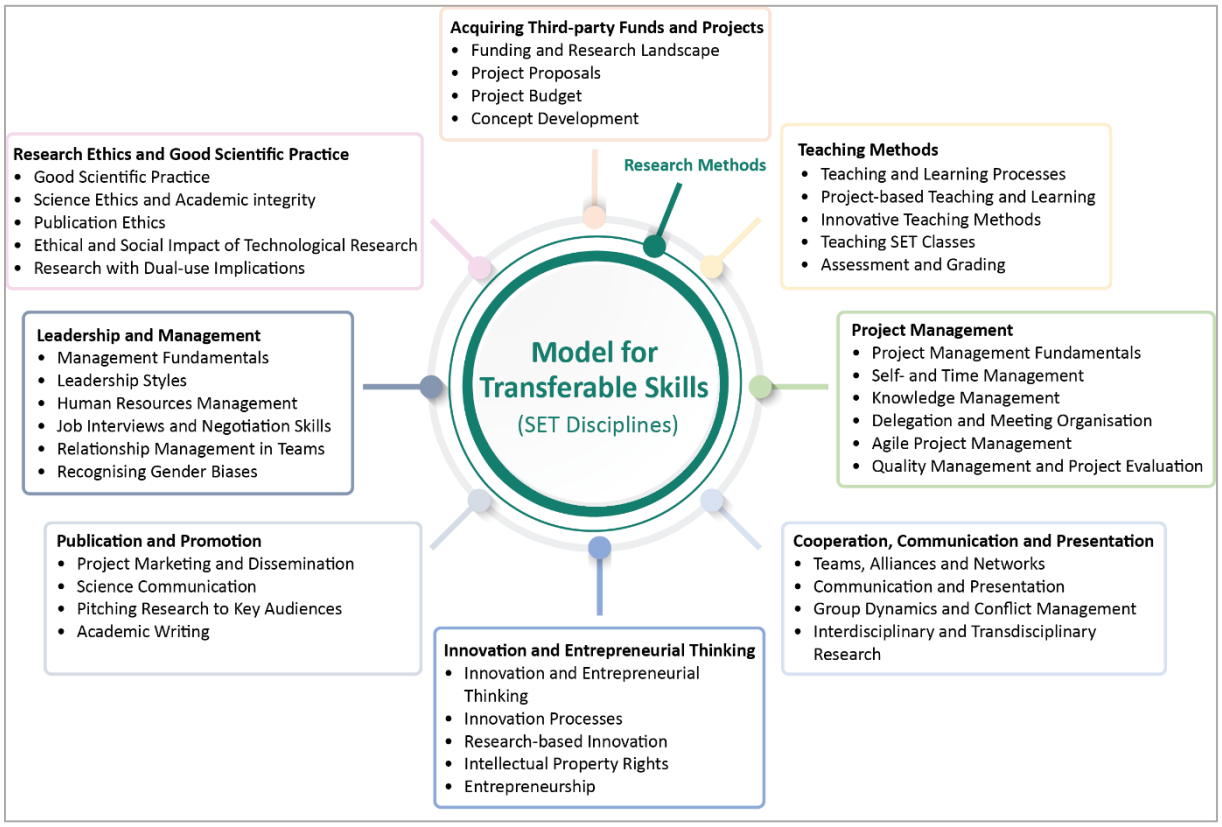

Figure 7: mindSET's European Core Curriculum in Transferable Skills. Source: mindSET.

The curriculum is part of the context providing you with content guidelines. Requirements can provide helpful guidance. It is important that you assess the relevance of the topics for your target group based on the needs of your learners. Just because it is clear to you why the content is important does not mean that it is clear to the learners. So, again, here are some key questions for your awareness and as a guide to help you construct meaning and help learners establish their own contact with the topic.

Exemplary significance

How can the learners apply what they have learned today? What general issue, what general problem does the specific content point to?

Relevance to the present

[8] See also: Learning oriented planning of a course in Hoffmann, Kiehne (2018), p.9ff.

What does it mean for the learners today? What is the significance of this particular content in the life of the learners; what significance should it carry in the context of the Training the mindSET curriculum?

Future significance

What will the content mean for learners tomorrow? What is the significance of the topic for the learners' future?

Content structure

How is my content structured? What is the nature of my content and what methodological arrangements arise from it?

Accessibility

How do I present the content? What are the special cases, phenomena, situations that can make the topics interesting, debatable, accessible, understandable and vivid?

An example

Participants can evaluate a large number of texts in a short time for relevant content for their own research.

These reading and analysis skills can also help you to assess funding opportunities as mentioned earlier.

Your course should produce precisely these skills. How can this succeed?

To be successful, you should think about your target group. Who is sitting across from you? What experiences have the young scholars already had? What can the participants possibly bring to the table in terms of prior knowledge? What interests the participants about your course? What is their life and work situation? The learning opportunities address levels of complexity that are reflected in levels seven and eight of the Europass (EU, 2021). The high degree of complexity of the objectives to be achieved is also reflected in greater complexity of the learning and teaching arrangements. It is not only about knowledge and knowing. For this, in the social and occupational forms provided, a lecture would suffice. But when it comes to skills that affect the attitude of the learners towards work - working on cases, for example - would be a way to exemplify reality in the course without straying out of bounds, which are usually constrained by the lack of time and space. But how can you facilitate learning appropriate to the topic, the target group, the setting and you?

Level 7 - learning outcomes

Knowledge	Skills	Responsibility and autonomy
Highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research Critical awareness of knowledge issues in a field and at the interface between different fields	Specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	Manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches; take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams

Level 8 - learning outcomes

Knowledge	Skills	Responsibility and autonomy
Knowledge at the most advanced frontier of a field of work or study and at the interface between fields	The most advanced and specialised skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice	Demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research

Figure 8: Learning outcomes – level 7 and 8 – of the European qualification framework. Source: Europass.

This "how" is the subject of the next part of this chapter.

III.5 Method – paths to the learning objective

Late Latin methodus < Greek méthodos = Path or course of an investigation, actually = way towards something[9]

In the spirit of the word's origin, we understand methods as ways to achieve learning objectives.

We now also pose questions regarding the choice of the method that will enable us to offer our learners the most suitable path.

We should therefore start by returning to the objective, because that is what decisively shapes the choice of method:

What should emerge as the new "state" of knowledge and the potential for action? (learning objective)

[9] https://www.duden.de/rechtschreibung/Methode (6 July 2021)

If your only concern is knowledge, then a bulleted list on a PowerPoint slide may be adequate, but if you want your participants to understand context and transfer the knowledge, then you need more complex learning arrangements. And now back to the target group:

Who are the learners? (target group)

Whether your course is well received also depends on whether the learners are comfortable with the learning and working methods you apply and are thus able to respond to your guidance throughout the workshop.

What should be worked through? (content)

The content has a certain logic. For example, is it about questions of attitude or about expertise regarding funding lines? This question determines whether a presentational or a discursive method is more appropriate.

Under what conditions will learning take place?

Let's take the phenomenon of time pressure. If your participants are stressed, they may not be able to engage with the material.

Where will the learning take place? (context)

The big question is: digital or analog? If analog, then at the university or in a seminar venue. All of this affects the choice of method.

What is going on here and now? (situation)

This question addresses the social conditions in which learning takes place. What is the relationship between the learners and you?

Who is shaping the teaching-learning situation? This is where you come in.

III.6 The complete-action approach as a design principle

The following model is a guideline for a course that aims at competence in action: The cycle of complete action: inform, plan, decide, execute, control, evaluate/reflect (**Circle of Complete Action**).

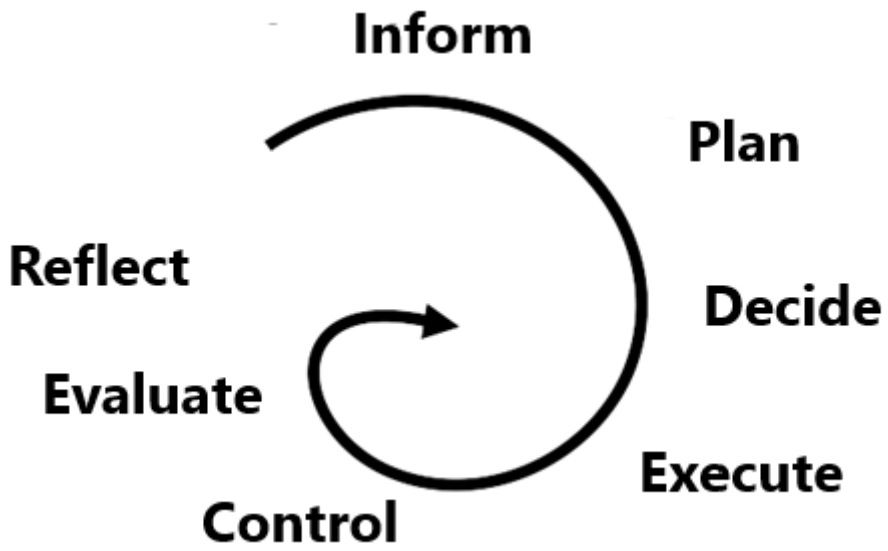

Figure 9: The cycle of complete action.
Source: KMK 2018, p.17.

Situations from the everyday life or future lives of the participants serve as a starting point for didactic decisions.

The activity should be oriented toward this situation and be self-executed or at least conceptually thought through.

The aim is to grasp the reality of a globalized and digitalized world of life and work.

Actions intentionally use, contextualize, and reflect on learner experiences.

Actions also address social processes – for example, a statement of interest or conflict resolution – as well as different perspectives on career and life planning.

In addition to these didactic principles, the focus on the product of an action is crucial. This could take the form of a podcast, video or text, or a presentation (such as an abstract for a research proposal).

An example illustrates the circle with the methodological decisions.

Objective: The learners know aspects of moderating groups. They can apply discussion techniques to lead a discussion. They reflect on their role as a leader.

Inform: Moderation techniques are demonstrated in a presentation.

Plan: The learners are given the task of designing a discussion on a topic.

Decide: After consideration, you decide on a facilitation method.

Execute: In a simulation with assigned roles, learners moderate a discussion.

Control: Participants use oral questioning to determine the success of the discussion.

Evaluate: Different group members use different techniques. After a few sessions, learners evaluate which facilitation technique is the most suitable.

Reflect: Learners consider their own learning process and articulate how they arrived at their decisions.

The circle is thus complete and, in the best case, has given rise to a capacity for action. Now it is time for you to merge the objective, the content, and the method. To do this, you can ask yourself three short questions:

Are my goals achievable and understandable to my participants?

Can I achieve these goals with the methods at my disposal?

Are the methods appropriate to the topic, the context, the learners and myself?

III.7 My state of the art

If you have found satisfactory answers to these questions, then you can confidently prepare your course. The participants will appreciate your thorough preparation. Teaching is an art, and your course is a social work of art that is created through the interplay of the subject matter, the learners, you, and the context. There is no state of the art, only an art of processing.

The following table, used in the context of teacher education in the U.S., provides guidance for ranking your choice of methods.

Here, four dimensions are defined into which the forms of learning can be classified. “High-Tech, Teacher-Centered” describes a teaching approach that uses technology from the content and the teacher to advance the learning of the participants. Imagine yourself in front of the camera wearing a headset. You present and use it to provide prompts drawn from the canon of the topic, then design quizzes, ask questions, and provide feedback. Everything is focused on you and the technical possibilities that digital media offer you. In the quadrant to the right, the focus is on the technical, but you think more in terms of learning needs of the participants, which you use as the jumping-off point from which to structure your course. For example, you could ask at the beginning what the learners' experiences with the topic are, and then structure the rest of your course in a process-oriented way, building on the answers you receive. In doing so, your role is one of facilitation, as opposed to presentation. In the bottom two quadrants imagine a seminar room. To the left, the chairs are placed in rows one behind the other in order to have a good view of the blackboard from which you present the content. In the right quadrant, imagine a circle of chairs in the same room with learners talking to each other while you stimulate and moderate the discussion.

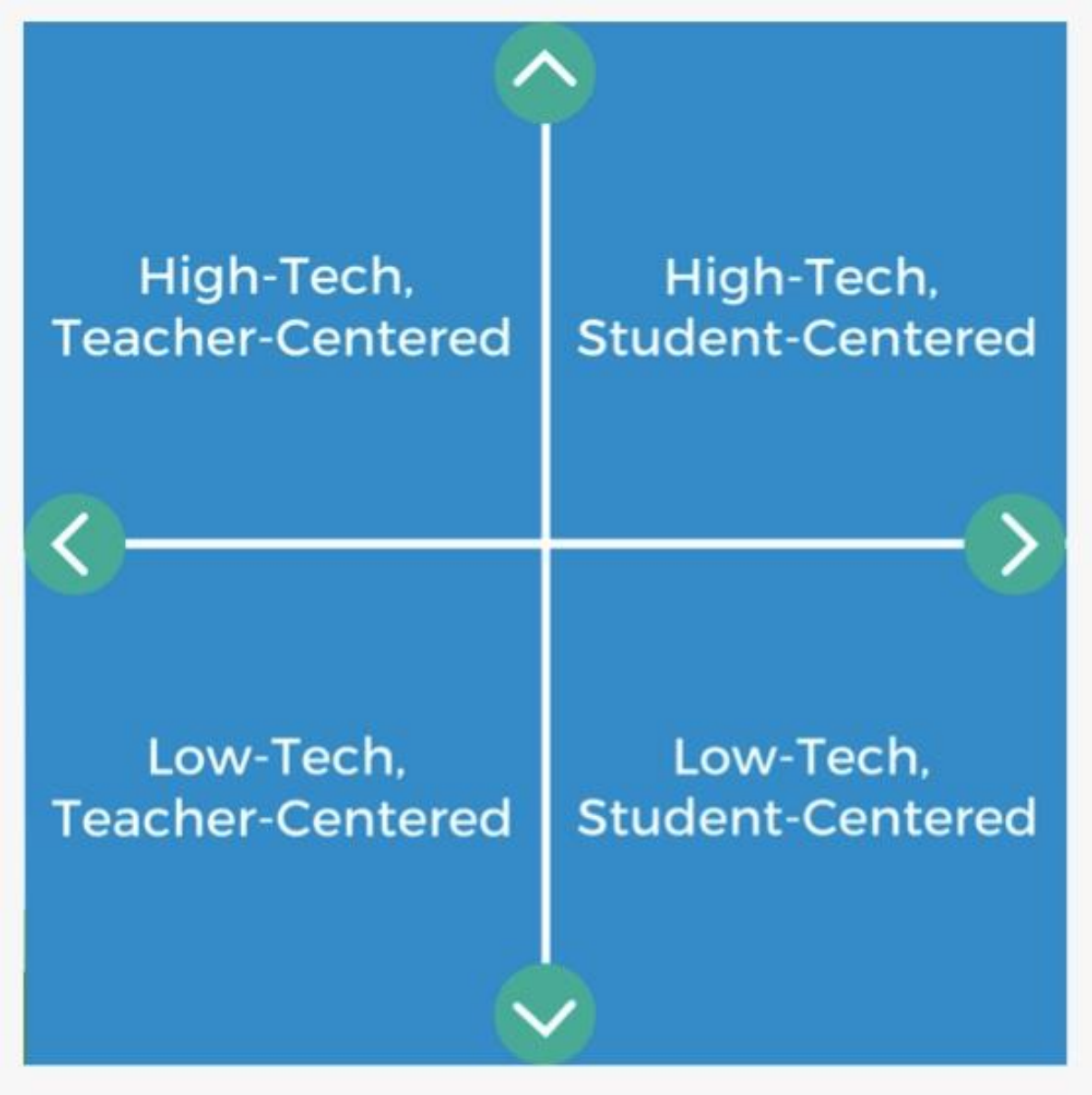

Figure 10: Table of learning classification.
Source: https://teach.com/what/teachers-know/teaching-methods/ (14 July 2021)

Which quadrant fits with your content, you, the learners, and the context? Perhaps you could imagine changing the approach depending on the learning phase? It is possible! You decide what is right at what point in time. There are hundreds of teaching methods, which does not always make this choice easy. Here is a list of online resources that will give you some options to choose from. Forget the guiding questions in the process. A method is only as good as your clarity about what you want it to accomplish.

Links to method collections German/English

In German:

https://www.bzhl.tu-berlin.de/menue/bzhl_methodenbox/ (14 July 2021)

In English:

https://teach.com/what/teachers-know/teaching-methods/

https://onlinedegrees.sandiego.edu/complete-list-teaching-methods/

https://fctl.ucf.edu/teaching-resources/teaching-strategies/teaching-methods-overview/ (14 July 2021)

https://www.northwestern.edu/searle/resources/teaching-strategies-materials.html (14 July 2021)

IV. Quality Assurance and Evaluation

Permanent quality management ensures quality and quantitative dimensions of transferable skills training and courses. By means of scientific methods, it reviews the achievement of the training targets and if required, introduces suitable amendments of measures. Quality management systems should be guided by national and international as well as university-intern quality standards for teaching, further education training and for promotion of new talent.

Quality management covers **four phases**:

- **Planning phase:** Quality management ensures and operationalises strategy and targets of transferable skills training. This includes measures such as defining overall and sub-targets or defining measurable indicators and quality criteria.
- **Implementation phase:** Quality management accompanies the development and implementation of transferable skills training. It hereby collects and secures data of both quantitative and qualitative dimensions.
- **Control phase**: Based on the collected data, quality management examines the target achievement. Target-actual comparisons are executed; achievements and shortcomings are identified. Quality management draws data-based findings and conclusions. It defines which training may continue unchanged, which training needs to be amended and which new training and measures need to be introduced.
- **Action phase**: Quality management initiates the implementation of measures according to the identified conclusions. It transfers measures into a new quality cycle from planning and implementation to control and action phase.

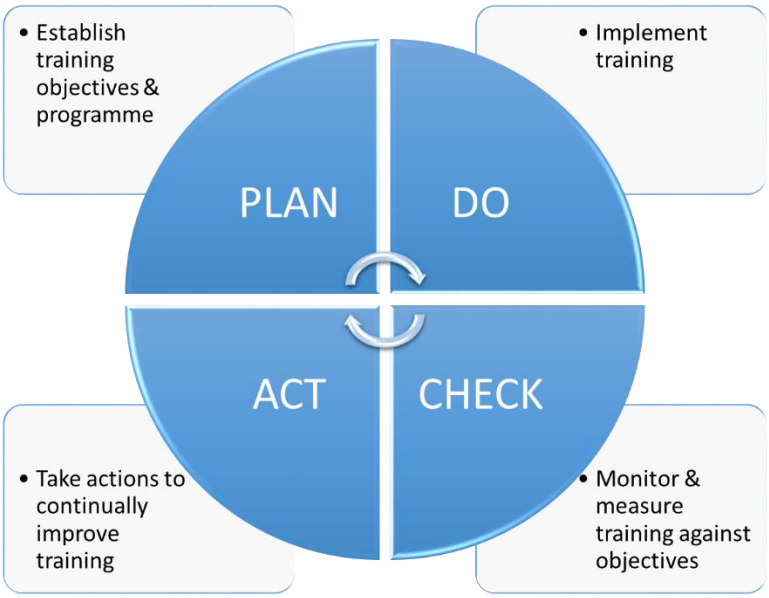

Figure 11: Quality assurance cycle for transferable skills training
Source: Anja Lietzmann

As to what extent transferable skills training is successful can be decided only against the **objectives linked with the training**. Thus, quality assurance depends on the definition of targets – whether these are quantitative targets in the shape of key numbers or qualitative targets that may express themselves as quality criteria for excellent training. Hereby, training targets are required to meet certain demands which are known as SMART criteria. Accordingly, targets should be…

- specific, that means clear, concrete and precise,
- measurable,
- achievable,
- relevant, that means beneficial and appealing,
- timed, that means connected with realistic deadlines.

The level as to what extent targets have been reached decides about the conclusions of the evaluation – decides about success or failure, the further continuation of training, the amendment or even termination of existing training (aspects) or the introduction of entirely new training measures.

An essential tool of quality management is the **evaluation design**. It is the overall concept that structures all activities related to quality assurance. It regulates the evaluation support of the planning and implementation phase as well as all measures of the control phase; it further provides decisive impetus to the action phase. The evaluation design determines specifications as to the following aspects:

- Function and benefit of the evaluation
- Evaluation objects
- Quality/success criteria and indicators
- Methods and instruments, incl. data collection and analysis measures
- Exploitation and application of findings
- Milestones and time schedule
- Resources and responsibilities.

In general, evaluation may explore a vast amount of aspects and topics. Hence, evaluation projects typically start with identifying information needs and determining what aspects should be investigated at all. Those aspects – called **evaluation objects** – are classified in five dimensions:

Object dimensions	Examples for transferable skills training
Inputs = preconditions and support structures for training	• Background (professional qualification & experience) and competences of training staff (hard and soft skills) • Financial resources • Facilities, technical equipment, furniture, air and light conditions, room size
Processes = development and implementation of training, teaching and learning processes	• Training methods (e.g. possibility for active participation) • Training contents and presentation • Planning and organisation of training courses • Consideration of the demands and interests of the target group / the labour market • Cooperation and communication • Course atmosphere
Outputs = concrete training results directly at training end, that may be on the level of individuals as well as on the level of entire universities	• Number of participants • Demographic characteristics of participants • Participants' satisfaction (e.g. with trainer, course structure, connection between theory and practice) • Development of target groups • Learning Outcomes

Outcomes = transfer results, arise in consequence but indirectly from the training, often appear medium- and long-term	• Motivation to implement training contents in practice • Ability to better deal with challenges and problems in the respective training field or in the own research field • Ability to better manage work tasks
Impacts = indirect results of wider scale that may influence university structures, research fields, educational systems, labour markets etc., appear long-term	• Contributions to successfully complete the doctorate • Contributions to strengthen competences required to advance entire research fields or to generate innovations • Contributions to raise employability • Contribution to overcome skills gaps

An ambitious training programme of transferable skills defines objectives in all dimensions and accordingly, a complete evaluation examines target achievements in all dimensions.

Regarding the **execution of the evaluation**, the entire set of methods of empirical research is available. Both quantitative and qualitative methods may be used, in different variations and combinations. They allow the collection and analysis of data according to scientific criteria. Typical instruments for data collection are surveys, interviews, focus groups, observation, document analysis or monitoring. To analyse data, frequently used examples for evaluation methods are statistical characteristics (e.g. statistical distribution, mean value) or content analysis.

An essential part of the evaluation of transferable skills training consists in the **examination of training courses**. The evaluation investigates as to what extent training courses are successful and what course aspects need to be improved. A good-practice-approach hereby analyses different perspectives such as those of course participants and those of course trainers. As to the former target group, the implementation of a three-step-procedure as follows is recommended:

1. **Expectation Survey**: Prior the course, it collects information on participants' specific expectations and motivations of as well as on previous knowledge. This allows the trainer to design course contents and presentation exactly to the needs of the participants.
2. **Course Survey**: At the end of training, participants are asked about course satisfaction and learning outcomes. This allows to identify strengths and weaknesses of the course.
3. **Transfer Survey**: Six months after the course, information is gathered on the application of acquired knowledge in real work and study environments. This allows to learn about the usefulness of the courses for real-life-situations.

V. European Training Manual: Course Details for the Training of Transferable Skills

Module 0: Research Methods and Career Planning

1 Nr. | Module

0 – Research Methods and Career Planning

2 Nr. | Course Title

0 – a: Research methods (introductory course)

3 Course Format

The course will be taught as a classroom teaching or online course.

4 Key Data

Scope (class hours): 20 working units á 45 min.
ECTS: 1 (recommended)

5 Learning Outcomes

- Gain basic knowledge on different definitions of science
- Gain an overview of research methods and their fields of application
- Learn to select appropriate research methods and understand basic methods of application
- Know how to formulate research goals and how to design a work plan for the PhD thesis
- Know how to carry out literature searches and acquire knowledge from scientific articles
- Own an understanding of quality in research
- Know how to use the ability to reason in a critical manner to ensure quality of research and to develop existing knowledge further

6 Overall Contents

- Introduction to the theory of science
- Inter- and transdisciplinary research
- What makes a good literature review? (Search and knowledge acquisition strategies)
- Research question and methodological approaches (inductive vs. deductive research)
- Quantitative vs. qualitative research (objectives, procedures, methods, applications, data analysis, advantages and disadvantages)
- Quantitative research methods for data collection (e.g. survey/questionnaire, standardised interview, systematic observation)
- Qualitative research methods for data collection (e.g. expert interviews, case studies, observations)
- Quantitative data analysis (e.g. data systemisation and classification, hypothesis development and testing, establishing laws and models; descriptive/inferential statistics)
- Qualitative data analysis (interview transcription, coding, grounded theory, discourse analysis, etc.)
- Constructive criticism of research works

7 Overview of Teaching Methods

- Input
- Individual exercises

- Group work/ presentations and group discussions
- Working on participants' research topics
- Online learning platform for self-study
- Online assignments

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience

- PhD students with little or no previous knowledge

9 Tipps for implementation | Adjustments

Group Size
For lager groups than 16 participants allow for up to 5 persons in the exercises. Consequently, the time for group work needs to be extended accordingly.

10 Course materials / reading list

The slides and case studies will be distributed at least at the beginning of the course.

Recommended literature/case studies:

- Aristotle's Metaphysics, transl. with commentaries and glossary by H. G. Apostle (1979). Peripatetic Press.
- Staley, K.W. (2014), An introduction to the philosophy of science. Cambridge University Press.
- Balnaves, M., Caputi, P. (2001), Introduction to quantitative research methods: an investigative approach. Sage.
- Lapan, S., et al. (2012), Qualitative research: an introduction to methods and designs. Jossey-Bass.
- Gray, P., Williamson, J., Karp, D., Dalphin, J. (2007), The research imagination: An introduction to qualitative and quantitative methods. Cambridge University Press.

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course structure
- Preparing course contents, methods & materials
- Conducting survey on course expectations of participants; accordingly, adaptations to the course (if applicable)
- Course organisation (registration of participants, room booking, catering, conference tool etc.)

Break times: 60 min lunch break, 2x15 min coffee breaks

Day 1

Course Phase	Duration	Contents	Objectives	Teaching Methods	Media | Material	Active participants
Introductory phase	30 min	**Introduction** • Welcome • Agenda • Self-presentation of trainer • Self-presentation and expectations of participants • Introduction to workshop objectives & methods	• Participants get to know what the course will be about and how it will be implemented • Trainer and participants get to know each other • Creating a constructive and positive working atmosphere	• Presentation	• Power Point slides • Flipchart	• Trainer • All participants
Working phase 1	45 min	**Basics** • What is science? • What is knowledge? • The formation of disciplines: is there a need to overcome the disciplinary boundaries?	• Participants learn the theory of science and knowledge • Participants gain knowledge on transdisciplinary research	• Presentation • Plenary discussion	• Power Point slides • Flipchart	• Trainer • All participants
Working	90 min	**Where does science/research start?**				

		• The endless quest for (relevant) literature • Literature analysis • Contradicting research articles and why they foster knowledge acquisition	• Participants learn search strategies • Participants can differ between relevant and irrelevant articles • Participants are able to conduct a profound literature analysis	• Exercise • Input • Discussion	• Power Point Slides • Flipchart • Catalogue search	• Trainer • All participants
Working phase 3	60 min	**Methodological approaches to (research) questions** • Inductive and deductive logic • Phrasing research questions • Building interdisciplinary bridges: what is the benefit for my research?	• Participants are aware of the fundamentals of logic • Participants can phrase concise research goals • Participants overcome their prejudices against methods from other disciplines	• Input • Discussion • Small group exercise	• Power Pont Slides • Flipchart • Case studies of research questions	• Trainer • All participants • Small groups of students
Working phase 4	90 min	**Qualitative and quantitative research** • Objectives and methods • When to apply which method • Pros and cons of the methods	• Participants know the characteristics of qualitative and quantitative methods • Participants are aware of the disadvantages and advantages of the methods • Participants learn the field of application of the methods	• Input • Discussion • Interactive Presentation	• Power Pont Slides • Flipchart • Questionnaires • Case studies	• Trainer • All participants • Small groups of participants
Working phase 5	45 min	**Wrap up** • Preparation of the assignment in between the workshop days • Questions and answers • Outlook on day two	• Participants apply the theoretical frameworks to real life research	• Discussion	• Power Point slides • Prepared assignment	• All participants • Trainer

Day 2

Course Phase	Duration	Contents	Objectives	Teaching Methods	Media | Material	Active participants
Working phase 6	30 min	**Review of the previous day/Assignment** • Answering open questions • Which case study has which (dis-)advantages?	• Participants can judge on the aptness of methods • Participants are able to choose the appropriate method for their own research	• Q&A • Plenary discussion	• Websites of own institution (library, public affairs) • Books	• Trainer
Working phase 7	90 min	**Data collection** • How to collect data • The differences between quantitative and qualitative research methods • Design of interviews	• Participants learn how to collect data with qualitative and quantitative research methods • Participants are able to design different types of interviews • Participants can develop strategies for recruiting interview partners • Participants are familiar with the relevant software	• Input • Interactive presentation • Discussion	• YouTube videos • Power Point slides • Mindmaps • Podcasts	• Trainer • All participants
Working phase 8	90 min	**Data analysis** • Lost in numbers – How to foster interpretation of the data by systemisation • From figures to hypothesis • The use of transcriptions and discourse analysis	• Participants learn not to lose overview of the collected data • Participants can classify and systemise data appropriately • Participants are able to reason critically • Participants ensure the quality of their research	• Input • Mindmap • Small group discussion • Analysis of video/podcast as show case for discourse analysis	• Moderation cards • Flipchart • Power Point slides • Video/podcast	• All Participants • Trainer • Small groups of participants

Working phase 9	120 min	**Hands-on session** • Applying the presented research methods and principles to one's own project • Presentation of the results	• Participants transfer the course contents to their own research • Participants develop strategies for furthering their knowledge • Participants deepen their ability to reason	• Exercise • Supervision • Presentation • Discussion	• Own research project	• All Participants • Trainer
Closing phase	45 min	**Closure** • Q&A about the presented topics and feedbacks collections • Course evaluation • Outlook	• Quality assurance • Participants reflect on their learning outcomes	• Discussion • Feedback circle („flashlight") • Online evaluation	• Online questionnaire	• All Participants • Trainer

Post-course Phase

- Course documentation to be sent to participants (photo protocol and presentations).
- Lessons learned, results of evaluation
- Transfer evaluation

1 Nr. | Module

0 – Research Methods and Career Planning

2 Nr. | Course Title

0 – b: Career paths and career planning

3 Course Format

This course will be taught with a blended learning approach

4 Key Data

Scope (class hours): 16 working units á 45 min. each (12 hours) ECTS: 1 (recommended)

5 Learning Outcomes

- Career planning. Get acquainted with assessment tools for career planning and to identify your current strengths and skills
- Learn how to keep up to date with the job market and how to network
- Digital (Scientific) Literature, Bibliographies and Bibliometrics

6 Overall Contents

- Getting acquainted with the PhD programme at the local institution
- Self-assessment tools for soft skills career planning
- Assessment and self-assessment tools for career planning
- Originating, designing, and managing research projects
- Conducting research surveys and assessing existing experimental research methodologies. Understanding which research questions that can be answered with these methods
- Learn how to keep up to date with the job market and how to network
- Getting acquainted with the career planning and placement programs developed at your institution
- Elements to guide the professional careers to the market, by optimizing the relationship between the characteristics required in the different target destinations and the personal system of motivation and behavioural skills.
- Usage of Digital Scientific Literature and training in performing systematic searches in the many clusters available
- Analyse the results on a quantitative basis and organize a bibliographical database
- Build your own digital identities as researcher
- Acquire helpful tools for a deep understanding of their research field and their research topic, as well for their literature reviews

7 Overview of Teaching Methods

- Inputs from trainers
- Group discussion
- Practical case: examples (e.g. case studies/good practice)
- Exchange of experience
- Project work

8 Target Group

Qualification phase

- PhD students at the beginning of their PhD career

Prior knowledge or experience

- PhD students with little or no previous knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions/tasks before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions by webinars. It is very important to provide examples of usage of the presented tool and techniques, but also to give them the opportunity to test their own understanding in a project work.

10 Course materials / reading list

The slides will be distributed
Online resources for comprehensive science mapping analysis

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	45 min	• Welcome, Agenda • Self-presentation of participants • Introduction of the University • Introduction of the training in the PhD programme (credits to be awarded, course choice, course delivery)	• Creating a good working atmosphere • Participants get to know each other • Getting participants acquainted with local University and rules	• Presentation	• Flip charts & post-its	• Trainer • All participants
	45 min	• Introduction of the supervision and evaluation in the PhD programme (timeline for supervisor's choice, milestones) • Introduction to the Ethical Code of PhD programme (rights and duties of the candidates)	• Getting the candidates acquainted with their duties and rights • Inform the candidates of the ethical standards of the institution	• Presentation	• Online resources / Regulations	• Trainer • All participants

		• Supporting programs in the institution (psychological and legal support for PhD candidates; diversity support)				
Working phase	45 min	• Self-assessment tools for soft skills development • Assessment and Self-assessment tools for career planning	• Identifying their own strengths and weaknesses • Understanding the possible outcomes of the PhD career, which outcome fits most to the candidate and how to address the PhD career to maximize the probability of success • Avoiding creation of wrong expectative	• Presentation • Group-work	• PPT Presentation • Online assessment and self-assessment tools	• Trainer • All participants
	45 min	• Originating, designing, and managing research projects • Conducting research surveys and assessing existing experimental research methodologies. • Understanding which research questions can be answered with these methods	• Providing the fundamental knowledge about surveys and experimental research methodologies	• Presentation • Discussion of paper • Group-work	• Flip charts & post-its	• Trainer
	45 min	• Learn how to keep up to date with the job market and how to network • Placement program of the institution • Alumni association of the institution	• Informing the candidates about the placement programs enforced by their institution • Reinforcing the PhD community	• Presentation • Discussion	• Flip charts & post-its • PPT Presentation	• Trainer • All participants

	45 min	• Placement in different industrial sectors • Individual entrepreneurship • Start-ups support provided by your institution	• Guiding the professional careers to the market	• Presentation • Discussion	• PPT Presentation	• Trainer
	45 min	• Academic careers and their development • How to keep updated with Post-doc opportunities at your institution, in your country and abroad • Temporary and permanent positions in Academia • Funding opportunities for PhDs and post-docs	• Providing useful information for the candidates who intend or consider the possibility of conducting research in Academia	• Presentation • Discussion	• PPT presentation	• Trainer • All participants
Closing phase	45 min	• Q&A about the presented topics and feedbacks collections	• Clarifying contents and collect information for improvements	• Discussion	• None	• Trainer • All participants

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	45 min	• Review of contents of the previous day	• Reinforcing main contents delivered	• Presentation	• PPT Presentation • Flipchart	• Trainer • All participants
Working pPhase	45 min	• Usage of Digital Scientific Literature and training in performing systematic searches in the many clusters available	• Getting acquainted with the different available scientific databases and clusters	• Presentation	• PPT Presentation • Usage of web resources	• Trainer • All participants

			• Understanding the institution bibliographic resources			
	45 min	• H-index and related bibliographic indices • Citations, self-citations • Analyzing results and citation reports	• Analyze the results on a quantitative basis and organize a bibliographical database	• Presentation • Group Work	• PPT Presentation • Web resources	• Trainer • All participants
	45 min	• Importance of building a digital identity • Main bibliographic digital identities: Google scholar account, researcherID, scopus author ID, ORCID, Researchgate profile,	• Importance of creating digital identities as researcher	• Presentation • Group Work	• PPT Presentation • Web resources	• Trainer • All participants
	45 min	• Literature reviews • Online resources, printed documents, and texts available in the institutions' library • Institution's library access rules	• Acquire helpful tools for a deep understanding of their research field and their research topic, as well for their literature reviews	• Presentation • Group Work	• PPT Presentation • Web resources	• Trainer • All participants
	45 min	• Application: setting up a state of the art analysis about a chosen research subject	• Using the available tools to set up a state-of-the-art analysis	• Presentation • Group Work	• Web resources • PPT presentation	• Trainer • All participants
	45 min	• Hands-on session: performing a citation search and analysis • Preparing a report on citation analysis • Hands-on session: building digital identities	• Apply content of previous unit, and learn how to perform citation analysis • Apply content of previous unit, and get digital identities	• Group work	• Web resources	• Trainer • All participants

Closing phase	45 min	• Q&A about the presented topics and feedbacks collections	• Clarifying contents and collecting information for improvements	• Discussion	• None	• Trainer • All participants

Post-course phase

Not scheduled for this preparatory module

Module I: Research Ethics and Good Scientific Practice

1 Nr. | Module

I – Research ethics and good scientific practice

2 Nr. | Course Title

I – 1: Good scientific practice

3 Course Format

Lectures, workshop sessions, supervised group discussions

4 Key Data

Scope (class hours): 16 working units á 45 min. each (12 hours) ECTS: 2,5 (recommended)

5 Learning Outcomes

- Know and apply central principles of good scientific practice
- Be able to ensure academic integrity
- Recognize critical situations in everyday research, to avoid “academic misconduct”
- Recognize and analyse ethical and social aspects and issues inherent in technology
- Know how to analyse and assess ethical and social issues related to scientific and technological research

6 Overall Contents

- Basic values and rules for conducting responsible science
- Informed consent
- Responsibility
- Responsibility in design and implementation
- Good scientific practice and academic misconduct
- Publication Ethics
- Responsible research
- Social impact

7 Overview of Teaching Methods

- Short inputs
- Analysis of case-studies
- Group discussions
- Problem-oriented small group learning
- Exchange of experience
- Reflections

8 Target Group

Qualification phase
- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience
- PhD students with little or no previous knowledge

9 Tips for implementation | Adjustments

Max. 25 students
For larger groups (more than 25 students) it is recommended to have TAs to support group work
Multidisciplinary groups are encouraged to enrich the discussion and the constructive exchange of different perspectives and practices

10 Course materials / reading list

Slides of the lectures will be made available for students

Hughes J, Hunter D, Sheehan M, Wilkinson SD, Wrigley A. Hughes J (Ed.). 2010. *European Textbook on Ethics in Research*. Publications Office of the European Union

Van de Poel I, Royakkers, L. 2011. *Ethics, Technology, and Engineering*. Wiley-Blackwell

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)
- Selected papers and chapters from the book to be sent to participants in advance

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	45 min	• Welcome and self-presentation of participants • Introduction to the topics of the course and of the session • Basic values	• Creating a good working atmosphere • Participants get to know each other • Students are introduced to the course contents, to the teaching methods, and to the assessment	• Presentation •	• Slides	Lecturer All participants
Working phase	45 min	• Basic values and rules for conducting responsible science	• Locating ethics in research	• Presentation • Short discussions	• Slides	Lecturer All participants
	45 min	• Informed consent	• The role that consent plays in research ethics	• Presentation	• Slides	Lecturer
	45 min	• Informed consent	• The elements of a valid consent	• Case Studies	• Cases written in sheets distributed among students	Lecturer All participants

	45 min	• Responsibility: case-studies	• The centrality of the notion of responsibility and the different cases studies	• Presentation	• Slides •	Lecturer All participants
	45 min	• From passive to active responsibility	• The necessity of a paradigm change in the case of responsibility and new technologies • Active responsibility as a way to avoid negative effects and to promote positive effects	• Presentation • Group discussion	• Slides	Lecturer All participants
	45 min	• Ethics in design	• To show the inherent moral character in the design of technologies • Critical issues in the moralization of technologies	• Presentation	• Slides	Lecturer All participants
	45 min	• Ethical questions in the design and management of research	• How to apply the active approach to responsibility in the case of research • Critical issues	• Group discussion • Presentation	• Slides	Lecturer All participants

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Working phase	45 min	• Good scientific practice and academic misconduct	• Balancing harms and benefits	• Presentation • Group discussion	• Slides	• Lecturer • All participants

	45 min	• Good scientific practice and academic misconduct	• The role of the research Ethics Committee	• Presentation	• Slides	• Lecturer • All participants
	45 min	• Publication ethics	• The peer-review process	• Presentation	• Slides	• Lecturer • All participants
	45 min	• Publication ethics	• Data manipulation, plagiarism, authorship, citations, conflict of interest, copyright and intellectual property	• Presentation	• Slides	• Lecturer
	45 min	• Responsible research	• To decline to active notion of responsibility to research practice	• Presentation • Group discussion	• Slides • Videos	• Lecturer • All participants
	45 min	• Case-studies in responsible research	• To evidence important and critical issues in applying the model of active responsibility to research practice	• Presentation	• Slides	• Lecturer • All participants
	45 min	• Social impact	• Have insight into how these ethical and social aspects and problems are related to social, political, and organizational backgrounds	• Presentation	• Slides	• Lecturer • All participants
Closing phase	45 min	• Summary • Open issues	• Each student has to prepare a proposal to be analyzed in the essay • The proposals have to be presented to the class	• Individual work • Pitch presentation	•	• All participants • Lecturers

Post-course phase

Short reflective essays in which the students connect the theory of the texts and of the lectures to the experiences of their PhD research. Essays have to be submitted within 3 weeks after the end of the course.

1 Nr. | Module

I – Research ethics and good scientific practice

2 Nr. | Course Title

I – 2: Science ethics and academic integrity

3 Course Format

Lectures, workshop sessions, supervised group discussions

4 Key Data

Scope (class hours): 16 working units á 45 min. each (12 hours) ECTS: 2,5 (recommended)

5 Learning Outcomes

- Develop sensitivity to ethical problems in research
- Develop ethical reasoning and judgement
- Know academic rules and code of conduct
- Learn strategies on how to deal with and address unethical conduct

6 Overall Contents

- Ethical guidelines in science
- Ethical reasoning and judgement
- Ethics commissions and committees
- Ethical responsibility of researchers
- Ethical conflicts in researchers' day-to-day work
- Form opinions, communicate and argue on controversial issues

7 Overview of Teaching Methods

- Short inputs
- Analysis of case-studies
- Group discussions
- Problem-oriented small group learning
- Exchange of experience
- Reflections

8 Target Group

Qualification phase
- Early stage researchers and academics

Prior knowledge or experience
- Researchers and academics with little or advanced experience in research

9 Tips for implementation | Adjustments

Max. 25 students For larger groups (more than 25 students) it is recommended to have TAs to support group work Multidisciplinary groups are encouraged to enrich the discussion and the constructive exchange of different perspectives and practices

10 Course materials / reading list

Slides of the lectures will be made available for students Francis L. Macrina. Scientific Integrity: Text and Cases in Responsible Conduct of Research, ASM Press; 4 edition, 2014

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)
- Selected papers and chapters of the book to be sent to participants in advance

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	45 min	• Welcome and self-presentation of participants • Introduction to the topics of the course and of the session	• Creating a good working atmosphere • Participants get to know each other • Students are introduced to the course contents, to the teaching methods, and to the assessment	• Presentation	• Slides	• Lecturer • All participants
Working phase	45 min	• Ethical guidelines in science	• Develop sensitivity to ethical problems in research	• Presentation •	• Slides	• Lecturer
	45 min	• Ethical guidelines in science	• Develop sensitivity to ethical problems in research	• Case Studies	• Cases written in sheets distributed among students	• Lecturer • All participants
	45 min	• Ethical guidelines in science	• Develop sensitivity to ethical problems in research	• Group discussions	• Slides	• Lecturer • All participants

	45 min	• Ethical reasoning and judgement	• Develop tools for ethical reasoning and judgement	• Presentation •	• Slides	• Lecturer
	45 min	• Ethics commissions and committees	• Know structure and mechanisms of ethics commissions and committees	• Presentation •	• Slides	• Lecturer
	45 min	• Ethics commissions and committees	• Analyze research cases to ethics commissions and committees	• Case Studies	• Cases written in sheets distributed among students	• Lecturer • All participants
	45 min	• Ethics commissions and committees	• Present a research case to ethics commissions and committees	• Group presentations	• Slides	• Lecturer • All participants

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Working phase	45 min	• Ethical responsibility of researchers	• Develop sensitivity to responsibility issues in research	• Presentation	• Slides	• Lecturer
	45 min	• Ethical responsibility of researchers	• Develop sensitivity to responsibility issues in research	• Case Studies and group discussions	• Cases written in sheets distributed among students • Slides	• Lecturer • All participants
	45 min	• Ethical conflicts in researchers' day-to-day work	• Locate unethical research conduct	• Presentation •	• Slides	• Lecturer
	45 min	• Ethical conflicts in researchers' day-to-day work	• Learn strategies on how to deal with and	• Case Studies and group discussions	• Cases written in sheets distributed among students	• Lecturer • All participants

			address unethical conduct		• Slides	
	45 min	• Form opinions, communicate and argue on controversial issues	• Know academic rules and code of conduct • Learn strategies on how to deal with and address unethical conduct	• Presentation	• Slides	• Lecturer
	45 min	• Form opinions, communicate and argue on controversial issues	• Know academic rules and code of conduct • Learn strategies on how to deal with and address unethical conduct	• Case Studies	• Cases written in sheets distributed among students	• Lecturer • All participants
	45 min	• Form opinions, communicate and argue on controversial issues	• Know academic rules and code of conduct • Learn strategies on how to deal with and address unethical conduct	• Group discussions	• Slides	• Lecturer • All participants
Closing phase	45 min	• Summary • Open issues	• Each student has to prepare a proposal to be analyzed in the essay • The proposals have to be presented to the class	• Individual work • Pitch presentation		• All participants • Lecturers

Post-course phase

Short reflective essays in which the students connect the theory of the texts and of the lectures to the experiences of their PhD research. Essays have to be submitted within 3 weeks after the end of the course.

1 Nr. | Module

I – Research ethics and good scientific practice

2 Nr. | Course Title

I – 3: Publication Ethics

3 Course Format

Lectures, workshop sessions, supervised group discussions

4 Key Data

Scope (class hours): 16 working units á 45 min. each (12 hours)
ECTS: 2,5 (recommended)

5 Learning Outcomes

- Know ethical standards in collaborative work and publication
- Locate critical aspects in the peer review process
- Locate critical aspects in manuscript preparation
- Know research ethical codes in conflict situations
- Know the European "Plan S" for open publishing by 2020

6 Overall Contents

- Ethical standards in collaborative work and authorship
- Issues in data fabrication, falsification, and image manipulation
- Plagiarism
- Citation manipulation
- Conflict of interest
- Human rights, privacy, and confidentiality
- Copyright and intellectual property
- Open access science publishing and open access to data

7 Overview of Teaching Methods

- Short inputs
- Analysis of case-studies
- Group discussions
- Problem-oriented small group learning
- Exchange of experience
- Reflections

8 Target Group

Qualification phase

- PhD students at the beginning of their qualification phase
- Early stage researchers and academics

Prior knowledge or experience

- PhD students with little or no previous knowledge
- Researchers and academics with little or advanced experience in research

9 Tips for implementation | Adjustments

Max. 25 students
For larger groups (more than 25 students) it is recommended to have TAs to support group work
Multidisciplinary groups are encouraged to enrich the discussion and the constructive exchange of different perspectives and practices

10 Course materials / reading list

Slides of the lectures will be made available for students
Selected papers and book chapters to be distributed during the course.

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)
- Selected papers to be sent to participants in advance

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	45 min	• Welcome and self-presentation of participants • Introduction to the topics of the course and of the session •	• Creating a good working atmosphere • Participants get to know each other • Students are introduced to the course contents, to the teaching methods, and to the assessment	• Presentation •	• Slides	• Lecturer • All participants
Working phase	45 min	• Ethical standards in collaborative work and authorship	• Know ethical standards in collaborative work and publication	• Presentation •	• Slides	• Lecturer •
	45 min	• Ethical standards in collaborative work and authorship	• Know ethical standards in collaborative work and publication	• Case Studies • Group discussions	• Cases written in sheets distributed among students • Slides	• Lecturer • All participants
	45 min	• Issues in data fabrication, falsification, and image manipulation	• Know ethical standards in collaborative work,	• Presentation •	• Slides	• Lecturer •

			publication and data analysis			
	45 min	• Issues in data fabrication, falsification, and image manipulation	• Know ethical standards in collaborative work, publication and data analysis	• Case Studies • Group discussions	• Cases written in sheets distributed among students • Slides	• Lecturer • All participants
	45 min	• Plagiarism	• Locate critical aspects in manuscript preparation and writing	• Presentation •	• Slides	• Lecturer •
	45 min	• Plagiarism	• Locate critical aspects in manuscript preparation and writing	• Case Studies • Group discussions	• Cases written in sheets distributed among students • Slides	• Lecturer • All participants
	45 min	• Citation manipulation	• Know ethical standards in collaborative work and publication	• Case Studies • Group discussions	• Cases written in sheets distributed among students • Slides	• Lecturer • All participants

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Working phase	45 min	• Conflict of interest	• Locate real or perceived conflicts of interest in the publication process	• Presentation	• Slides	• Lecturer
	45 min	• Conflict of interest	• Locate real or perceived conflicts of interest in the publication process	• Case Studies • Group discussions	• Cases written in sheets distributed among students • Slides	• Lecturer • All participants
	45 min	• Human rights, privacy, and confidentiality	• Know ethical standards in collaborative work and publication	• Presentation	• Slides	• Lecturer

	45 min	• Human rights, privacy, and confidentiality	• Know ethical standards in collaborative work and publication	• Case Studies • Group discussions	• Cases written in sheets distributed among students • Slides	• Lecturer • All participants
	45 min	• Copyright and intellectual property	• Know copyright and intellectual property rules	• Case Studies • Group discussions	• Cases written in sheets distributed among students • Slides	• Lecturer • All participants
	45 min	• Open access science publishing and open access to data	• Know the open access framework	• Presentation	• Slides	• Lecturer
	45 min	• Open access science publishing and open access to data	• Know the European "Plan S" for open publishing by 2020	• Case Studies • Group discussions	• Cases written in sheets distributed among students • Slides	• Lecturer • All participants
Closing phase	45 min	• Summary • Open issues	• Each student has to prepare a proposal to be analyzed in the essay • The proposals have to be presented to the class	• Individual work • Pitch presentation		• All participants • Lecturers

Post-course phase

Short reflective essays in which the students connect the theory of the texts and of the lectures to the experiences of their PhD research. Essays have to be submitted within 3 weeks after the end of the course.

1 Nr. | Module

I – Research ethics and good scientific practice

2 Nr. | Course Title

I – 4: Ethical and social impact of technological research

3 Course Format

Lectures, workshop sessions, supervised group discussions

4 Key Data

Scope (class hours): 16 working units á 45 min. each (12 hours)
ECTS: 2,5 (recommended)

5 Learning Outcomes

- Be aware of the ethical, social and political influence in technology development
- Know how to analyse and assess ethical and social issues related to technology

6 Overall Contents

- Ethical and social aspects of technoscience
- Moral issues in technology development (including design, management, control and production)
- Social responsibility
- responsible research and innovation
- Introduction to ethical assessment
- Ethical assessment of emerging technologies

7 Overview of Teaching Methods

- Short inputs
- Analysis of case-studies
- Group discussions
- Problem-oriented small group learning
- Exchange of experience
- Reflections

8 Target Group

Qualification phase
- PhD students at the beginning of their qualification phase
- Early stage researchers and academics

Prior knowledge or experience
- PhD students with little or no previous knowledge
- Researchers and academics with little or advanced experience in research

9 Tips for implementation | Adjustments

Max. 25 students For larger groups (more than 25 students) it is recommended to have TAs to support group work Multidisciplinary groups are encouraged to enrich the discussion and the constructive exchange of different perspectives and practices

10 Course materials / reading list

Slides of the lectures will be made available for students Selected papers and book chapters to be distributed during the course.

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)
- Selected papers to be sent to participants in advance

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	45 min	• Welcome and self-presentation of participants • Introduction to the topics of the course and of the session	• Creating a good working atmosphere • Participants get to know each other • Students are introduced to the course contents, to the teaching methods, and to the assessment	• Presentation	• Slides	• Lecturer • All participants
Working phase	45 min	• Ethical and social aspects of technoscience	• Be aware of the ethical, social and political influence in technology development	• Presentation	• Slides	• Lecturer
	45 min	• Ethical and social aspects of technoscience	• Be aware of the ethical, social and political influence in technology development	• Case Studies • Group discussions	• Cases written in sheets distributed among students • Slides	• Lecturer • All participants

	45 min	• Moral issues in technology development (including design, management, control and production)	• Be aware of the ethical, social and political influence in technology development • Be able to manage the ethical and social issues in the design of technology	• Presentation	• Slides	• Lecturer
	45 min	• Moral issues in technology development (including design, management, control and production)	• Be aware of the ethical, social and political influence in technology development • Be able to manage the ethical and social issues in the design of technology	• Case Studies • Group discussions	• Cases written in sheets distributed among students • Slides	• Lecturer • All participants
	45 min	• Social responsibility	• Be aware of the ethical, social and political influence in technology development • Be able to manage the ethical and social issues in the design of technology	• Presentation •	• Slides	• Lecturer
	45 min	• Social responsibility	• Be aware of the ethical, social and political influence in technology development • Be able to manage the ethical and social issues in the design of technology	• Case Studies • Group discussions	• Cases written in sheets distributed among students • Slides	• Lecturer • All participants
	45 min	• Responsible research and innovation	• Be aware of the ethical, social and political influence in technology development	• Presentation	• Slides	• Lecturer

			• Be able to manage the ethical and social issues in the design of technology			

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Working phase	45 min	• Responsible research and innovation	• Be aware of the ethical, social and political influence in technology development • Be able to manage the ethical and social issues in the design of technology	• Case Studies • Group discussions	• Cases written in sheets distributed among students • Slides	• Lecturer • All participants
	45 min	• Introduction to ethical assessment	• Know how to analyse and assess ethical and social issues related to technology	• Presentation	• Slides	• Lecturer
	45 min	• Introduction to ethical assessment	• Know how to analyse and assess ethical and social issues related to technology	• Presentation • Group discussion	• Slides	• Lecturer • All participants
	45 min	• Ethical assessment of emerging technologies	• Know how to analyse and assess ethical and social issues related to technology	• Case Studies (1 of 2)	• Cases written in sheets distributed among students	• Lecturer • All participants
	45 min	• Ethical assessment of emerging technologies	• Know how to analyse and assess ethical and	• Group discussions	• Slides	• Lecturer • All participants

			social issues related to technology			
	45 min	• Ethical assessment of emerging technologies	• Know how to analyse and assess ethical and social issues related to technology	• Case Studies (2 of 2)	• Cases written in sheets distributed among students	• Lecturer • All participants
	45 min	• Ethical assessment of emerging technologies	• Know how to analyse and assess ethical and social issues related to technology	• Group discussions	• Slides	• Lecturer • All participants
Closing phase	45 min	• Summary • Open issues	• Each student has to prepare a proposal to be analyzed in the essay • The proposals have to be presented to the class	• Individual work • Pitch presentation		• All participants • Lecturers

Post-course phase

Short reflective essays in which the students connect the theory of the texts and of the lectures to the experiences of their PhD research. Essays have to be submitted within 3 weeks after the end of the course.

1 Nr. | Module

I – Research ethics and good scientific practice

2 Nr. | Course Title

I – 5: Research with dual-use implications

3 Course Format

The course will be taught with a blended learning approach, with some modules online.
Switching to fully online version will be possible in case it will be needed.

4 Key Data

Scope (class hours): 16 working units á 45 min. each (12 hours)
ECTS: 2,5 (recommended)

5 Learning Outcomes

- Gain understanding of ethical issues related to dual-use technologies and how to address them appropriately
- Get to know dual-use technologies and their implications for ethical conduct

6 Overall Contents

- Ethical issues in SET research
- Ethical frameworks and principles
- Dual-use technologies: definitions, examples, regulations, assessment, related work opportunities
- Research and applications

7 Overview of Teaching Methods

- Input
- Analysis of case studies (e.g., Aerospace Engineering, or cases identified by the students, based on assigned reading)
- Laboratory on ethical issues: detection and addressing

8 Target Group

Qualification phase
- Recommended for PhD students at the beginning of their qualification phase

Prior knowledge or experience PhD students with little or no previous knowledge.
- Participants with previous experience can deepen their knowledge

9 Tips for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions by webinars.
As the course deals with dual-use of research, special attention must be paid to references to examples involving countries or governments or controversial ideologies or religious extremisms, like ideology or religion-based terrorism.

10 Course materials / reading list

Notes provided by the trainer
Further reading, including
- S. Unger, Controlling Technology: Ethics and the Responsible Engineer, 1994, ISBN: 9780030602825
- Anon. (ECORYS), Study on Civil Military Synergies in the field of Security, 2012 https://ec.europa.eu/home-affairs/sites/homeaffairs/files/e-library/documents/policies/security/pdf/study_ecorys_cimisos_final_report_en.pdf
- A. Marrone, M. Nones, The role of dual-use helicopters in the security and defence field, 2015, ISBN: 9788868125363

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	10 min	• Welcome, Agenda • Self-presentation of participants • Most important question	• Creating a good working atmosphere • Participants get to know each other	• Presentation	• Flipchart • Poster • Concept cards	• Trainer • All participants
	10 min	• Presentation of syllabus and workplan	• Drawing attention on objectives and methodology	• Presentation	• Beamer	• Trainer
	10 min	• Presentation of teaching material, bibliography	• Providing bearings to self-orienting in available resources	• Presentation	• Beamer	
	30 min	• Essentials of Professional Ethics	• Creating the context for application of ethics to technical environment and issues	• Presentation • Open discussion	• Beamer • Flipchart	• Trainer • All participants
Working phase	120 min	• Engineering, Safety	• Stimulating personal reflections on recognizing and dealing with professional ethical issues	• Presentation • Literature review • Open discussion	• Beamer • Flipchart	• Trainer • All participants
		• Accident investigation Prevention Learning by examples	• Understanding possible ethical implications of design choices	• Presentation • Open discussion	• Beamer • Flipchart	• Trainer • All participants

	120 min				• Accident reports • Videos	
Closing phase	45 min	• Open discussion, Q&A	• Consolidating self-awareness of ethical implications of research in the field	• Open discussion	• Flipchart	• Trainer • All participants
	15 min	• Wrap up:				

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	10 min	• Welcome, Agenda				• Trainer
	10 min	• Presentation of teaching material, bibliography	• Providing bearings to self-orienting in available resources	• Presentation	• Beamer	• Trainer
	10 min	• Rehearsal of Day 1				• Trainer • All participants
	30 min	• Open discussion, Q&A				• Trainer • All participants
Working phase	120 min	• dual-use technologies: definitions, context • regulatory aspects • technical aspects	• Understanding the spirit and implications of anticipating possible unforeseen usage of technology	• Presentation • Open discussion • Curiosity-driven practical examples	• Beamer • Flipchart	• Trainer • All participants

	30 min	• workshop preparation: role assignment, topic selection, rehearsal of rules	• - Autonomously develop the capability to recognize and deal with ethical issues	• - Presentation • - Interaction with peers	• Concept cards	• Trainer • All participants
	90 min	• workshop	• Autonomously develop the capability to recognize and deal with ethical issues	• interaction with peers	• Flipchart	• Trainer • All participants
Closing phase	45 min	• workshop debriefing	• Sharing experiences	• Oral Presentations	• Flipchart	• Trainer • All participants
	15 min	• Wrap up				

Post-course phase

Essay to be written until 2 weeks after course. To be uploaded on learning platform.

Module II: Acquiring Third-party Funds and Projects

1 Nr. | Module

II Acquiring third party funds and projects

2 Nr. | Course Title

II-I Funding and Research Landscape

3 Course Format

Classroom teaching

4 Key Data

Scope: 10 working units in class á 45 min. |1 ECTS point (recommendation): n.a. / to be updated

5 Learning Outcomes

- Feel confident in all aspects of research funding and third-party acquisition
- Possess overview on various means of public and private funding for research projects
- Possess knowledge of how to investigate suitable funding opportunities
- Possess knowledge of how to identify suitable funding for your own research projects

6 Overall Contents

- Means of research funding and third-party acquisition
- Structures and tasks of relevant funding organizations
- Introduction to different funding lines and programs
- Sources and data bases as to research funding opportunities and investigate open calls
- Significance of right funding sources to the research type

7 Overview of Teaching Methods

Presentation, brainstorming, moderated group discussions, practical exercise

8 Target Group

Qualification phase, prior knowledge or experience

- Recommended for PhD students at the beginning of their qualification phase
- PhD students with little or no previous knowledge
- Participants with previous experience may further deepen or structure their knowledge

9 Tipps for implementation | Adjustments

Group Size
For lager groups than 16 participants allow for up to 5 persons in the exercises. Consequently, the time for group work needs to be extended accordingly.

10 Course materials | Reading list

- Online sources & databases for open calls for projects/tenders and for funding programmes / projects
- Exemplary figures and numbers of funded programmes and projects; funding rates; rates successful/unsuccessful applications

- Examples of a current call for projects/tenders and programme documents
- Different examples of award / evaluation criteria, published as part of calls for proposals
- PC with internet connection

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Break times: 60 min lunch break, 2x15 min coffee breaks

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	45 min	**Introduction** • Welcome • Agenda • Self-presentation of trainer • Self-presentation and expectations of participants • Introduction to workshop objectives & methods	• Participants get to know what the course will be about and how it will be implemented • Trainer and participants get to know each other • Creating a constructive and positive working atmosphere	• Presentation	• Power Point Slides • Flipchart	• Trainer • Participants
Working phase 1	90 min	**Overview** • Introduction to national public funding organisations for basic and applied research (examples of research	• Participants get an overview on the national and European funding landscape, its logic and relevant stakeholders	• Presentation • Moderated group discussion	• Power Point Slides • Flipchart	• Trainer • Participants

		associations and societies, academies, universities, political funders etc.) • Introduction to private funders (industrial research organisations, companies, networks & clusters, foundations etc.) • Introduction to European public funding (Horizon 2020, ERC etc.)				
Working phase 2	90 min	**Deepening insight in the current funding landscape** • Further information on selected funding organisations which are important for STEM related research (national & EU), their programmes and research fellowships: type of support, objectives, target groups, preconditions, scope, deadlines etc.	• Participants get deeper insight in essential funders and understand relevant aspects around their funding	• Presentation • Moderated group discussion	• Power Point Slides • Flipchart	• Trainer • Participants
Working phase 3	90 min	**Researching current funding opportunities** • Online sources & databases for open calls for projects/tenders and for funding programmes / projects • Investigating funding for an own exemplary research idea on the internet	• Participants know where to search for funding opportunities and how to use relevant sources	• Presentation • Moderated group discussion • Brainstorming • Individual exercise: exemplary searching for funding	• Power Point Slides • Flipchart • PC with internet access	• Trainer • Participants

Working phase 4	90 min	**Identifying funding for my own project idea** • Quantitative dimensions of selected funders: number of funded programmes and projects; funding rates; rates successful/unsuccessful applications etc. (examples) • Funding opportunities available for different qualification levels and carrier stages • (Political) interests and concerns of funders - and how to meet them; match of the own research idea with funding priorities • Role of the proposal award criteria	• Participants get an understanding of chances and probabilities to gain funding • Participants get an insight in what funding opportunities are available for their research interests / at their qualification level and know how to identify relevant funding	• Presentation • Moderated group discussion • Analysis of calls for projects/tenders and programme documents	• Power Point Slides • Flipchart • PC with internet access	• Trainer • Participants
Closing phase	45 min	**Evaluation and Closure** • Course evaluation • Outlook	• Quality assurance • Participants reflect on their learning outcomes	• Feedback circle („flashlight“) • Online evaluation	• Online questionnaire	• Trainer • Participants

Post-course Phase

Course documentation to be sent to participants (photo protocol and presentations). Lessons learned Transfer evaluation

1 Nr. | Module

II Acquiring third party funds and projects

2 Nr. | Course Title

II-2 Project Proposals

3 Course Format

Classroom teaching

4 Key Data

Scope: 15 working units in class á 45 min. |2 ECTS points (recommendation): n.a. / to be updated

6 Learning Outcomes

- Feel confident in composing project proposals
- Possess knowledge on success criteria for high quality proposals and know how to apply them into own work practice
- Possess knowledge on planning and conceptual development
- Possess knowledge on design and structure
- Possess knowledge on presentational and linguistic peculiarities of proposals

6 Overall Contents

- Key aspects of drafting and formulating project proposals
- Criteria for a high-quality proposal
- Typical components and contents
- Formal requirements
- Expectations of contracting authorities
- Role of proposal reviewers
- Attractiveness and marketing aspects
- Persuasive project abstracts

7 Overview of Teaching Methods

- Presentation, brainstorming, moderated group discussions, small-group exercises, single task practical exercises

8 Target Group

Qualification phase, prior knowledge or experience

- Recommended for PhD students at the beginning of their qualification phase
- PhD students with little or no previous knowledge
- Participants with previous experience may further deepen or structure their knowledge

9 Tipps for implementation | Adjustments

Group Size
For lager groups than 16 participants allow for up to 5 persons in the exercises. Consequently, the time for group work needs to be extended accordingly.

10 Course materials | Reading list

- Different examples of proposal application forms (templates), national and European
- Example of a current call for proposal
- Different examples of award / evaluation criteria, published as part of calls for proposals
- Example of a proposal (potentially good-practice)
- Example of a proposal abstract (potentially good-practice)
- PC with internet connection

Internet Sources

https://www.projectmanager.com/academy/how-to-make-a-project-proposal
https://project-proposal.casual.pm/#templates
https://www.wikihow.com/Write-a-Proposal

Literature

Friedland, A. J.; Folt, C. L.; Mercer, J. L. (2018): Writing Successful Science Proposals. Third Edition
Kahlem, P. (2019). Grant Writing: Volume 1. The Basics of Grant Writing
Kass, L. (2016). Get Your Project funded!: A step-by-step-process for Grant Writing (English Edition)
Oruc, A.Y. (2017)- Handbook of Scientific Proposal Writing
Viju, G. K. (2013): How to Write a Research Proposal
Zane, E. B. (2016). Writing Proposals: A Handbook of What Makes your Project Right for Funding

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Break times: Day 1: 60 min lunch break, 2x15 min coffee breaks; day 2: 15 min coffee break

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	45 min	**Introduction** • Welcome • Agenda • Self-presentation of trainer • Self-presentation and expectations of participants • Introduction to workshop objectives & methods	• Participants get to know what the course will be about and how it will be implemented • Trainer and participants get to know each other • Creating a constructive and positive working atmosphere •	• Presentation	• Power Point Slides • Flipchart	• Trainer • Participants
Working phase 1	45 min	**Basics** • Project proposal definition • Introduction to the features of high-quality project proposals • Reasons for project proposals getting rejected	• Participants learn elements that make proposals successful • Participants get to know key aspects of high-quality proposals / quality criteria	• Presentation • Brainstorming • Moderated group discussion	• Power Point Slides • Moderation cards	• Trainer • Participants

			• Participants learn why high proposal quality is essential			
Working phase 2	45 min	**Get started: From the Call to the Project Proposal** • Procedure / steps from the published call to submitting the proposal • Phase 1: Preparation (understanding the call, eligibility & feasibility test, etc.) • Phase 2: Composing the proposal (exploring background, collecting/structuring ideas, composing draft, revision, completion, submission etc.) • Involvement of partners & establishing consortia	• Participants get familiar with the overall procedure and what precise steps to undergo when composing a proposal – from the call to the submission	• Presentation • Brainstorming • Small group discussion, incl. documentation & presentation to the entire group • Moderated group discussion	• Power Point Slides • Flipchart	• Trainer • Participants • Small groups (3-5 participants each)
Working phase 3	45 min	**Proposal Structure** • Overview on typical key elements of proposals: needs analysis, state of the art, objectives, output, outcomes, working programme, self-description, finance plan, dissemination, evaluation, sustainability, own research capabilities etc. • Guidelines and tips as to composing each of those key	• Participants get familiar with typical key elements of proposals • Participants learn how to effectively approach/design them • Participants learn how to develop reasonable work packages • Raising awareness of connecting proposal elements in a logic manner	• Presentation • Brainstorming • Small group discussion, incl. documentation & presentation to the entire group • Moderated group discussion	• Power Point Slides • Flipchart • Worksheets for proposal guidelines and tips • Examples of proposal application forms (templates), national and European	• Trainer • Participants • Small groups (3-5 participants each)

		elements (key questions, functions etc.) • Examples of management tools that support planning and implementation of projects: timetable, milestone plan, Gantt chart etc. • Instructions on developing work packages, thereby referring to project objectives, deliverables and work programme • Ensuring compelling logic of the proposal by putting expected output, project objectives and identified needs/problems in a genuine relation to each other				
Working phase 4	90 min.	**Change of Perspective: The proposal evaluator** • Types and tasks of proposal evaluators • Examples of proposal award criteria for external assessment • Composing an own proposal assessment, based on an example of a project proposal and guided by pre-developed evaluation criteria	• Participants learn to understand proposal assessment strategies and priorities • Participants get an impression of importance and contents of evaluation criteria • Participants learn how to develop and adapt their own work according to the expectations and demands of evaluators, thereby raising the chances of getting the proposal approved	• Presentation, amongst others through proposal evaluator as guest speaker (if feasible) • Brainstorming • Content analysis of award criteria • Small group exercise: Developing an own proposal assessment and making a final	• Power Point Slides • Examples of award / evaluation criteria • Proposal example • Worksheet with pre-prepared evaluation criteria	• Trainer • Participants • Small groups (3-5 participants each)

			• Participants learn how to apply evaluation criteria to an exemplary proposal and to make a final judgement	judgement (approved/rejected) • Moderated group discussion		
Working phase 5	90 min	**Technical rules of proposal writing** • Overview on technical rules: 1) formal requirements, 2) funding priorities, 3) eligible activities • Introduction to formal requirements (= rules and regulations by the funding authority) • Introduction to funding priorities (= interests and (political) targets of funding authorities connected with a call) • Introduction to eligible activities (= activities funded) • Examples for all types of compulsory aspects and where to find respective information • Analysis of technical rules in an example call	• Participants learn about technical rules and how to avoid rejections for formal reasons	• Presentation • Brainstorming • Moderated group discussion • Small group exercise: analysis of an example call • Case study (example call)	• Power Point Slides • Example call	• Trainer • Participants Small groups (3-5 participants each)
Working phase 6	45 min	**Proposal Language** • Overview on peculiarities of proposal language • Tips around designing a common thread, ensuring	• Participants learn how to write an appealing proposal text	• Presentation • Brainstorming • Moderated group discussion	• Power Point Slides • Example text with buzz words	• Trainer • Participants

		conciseness, comprehensiveness, appearance, use of buzz word etc. • Identifying buzz words in a text		• Single task exercise: identifying buzz words		
Closing phase	45 min	**Outlook and Closure of Day 1** • Questions and Answers • Outlook on day 2	• Rounding off day 1 by answering open questions • Participants gain clarity about agenda of day 2	• Questions and answers	Power Point Slides	• Trainer • Participants

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	45 min	**Introduction** • Agenda and objectives day 2 • Summary day 1	• Participants get to know contents of day 2 • Creating a constructive and positive working atmosphere • Repetition & consolidation of day 1	• Presentation • Moderated group discussion	• Power Point Slides	• Trainer • All participants
Working phase 7	90 min	**Basics of Proposal Abstracts** • Functions, structure and elements	• Participants get familiar with basics of composing abstracts	• Presentation • Brainstorming	• Power point slides • Abstract example	• Trainer • Participants

		• Quality criteria of proposal abstracts • Procedure to write an abstract • Analysing & evaluating an example of a project summary	• Participants get to know strengths and weaknesses of an abstract • Participants understand the crucial role of proposal abstracts	• Small group exercise: evaluating an example abstract	Worksheet with pre-prepared evaluation criteria	Small groups (3-5 participants each)
Working phase 8	270 min	**Writing an Abstract** • Writing a proposal abstract with connection to a real work context • Evaluating a partner's abstract according to pre-defined quality criteria	• Participants practice how to write a convincing abstract for a project idea of their own • Participants apply new knowledge on proposal writing to an abstract example • Participants transfer new knowledge to a real work context	• Single task exercise: writing an abstract • Small group exercise: evaluating an abstract / giving & receiving feedback	• PC • Worksheet with pre-prepared evaluation criteria	• Trainer • Participants • Small groups (2 participants each)
Closing phase	45 min	**Evaluation and Closure** • Course evaluation • Outlook	• Quality assurance • Participants reflect on their learning outcomes	• Feedback circle („flashlight") • Online evaluation	• Online questionnaire	• Trainer • Participants

Post-course Phase

Course documentation to be sent to participants (photo protocol and presentations). Lessons learned, Evaluation

1 Nr. | Module

II Acquiring third party funds and projects

2 Nr. | Course Title

II-III Calculating Project Budgets

3 Course Format

Classroom teaching

4 Key Data

Scope: 10 working units in class á 45 min. |1 ECTS point (recommendation): n.a. / to be updated

7 Learning Outcomes

- Possess knowledge in components, structure and requirements of financial plans as part of project proposal
- Feel more confident in calculating realistic project budgets and costs according to work packages and project demands
- Possess knowledge in how to design an own financial plan

6 Overall Contents

- Essential aspects of budget and budget calculation as part of the project proposal
- Introduction to financial plans of projects
- Typical components of financial plans
- Introduction to categories of costs
- Calculation of project budget and costs

7 Overview of Teaching Methods

Presentation, brainstorming, moderated group discussions, practical exercises

8 Target Group

Qualification phase, prior knowledge or experience

- Recommended for PhD students at the beginning of their qualification phase
- PhD students with little or no previous knowledge

9 Tipps for implementation | Adjustments

Group Size
For lager groups than 16 participants allow for up to 5 persons in the exercises. Consequently, the time for group work needs to be extended accordingly.

10 Course materials | Reading list

PC with internet connection, work sheet with cost examples

Literature
Friedland, A. J.; Folt, C. L.; Mercer, J. L. (2018): Writing Successful Science Proposals. Third Edition
Zane, E. B. (2016). Writing Proposals: A Handbook of What Makes your Project Right for Funding

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Break times: 60 min lunch break, 2x15 min coffee breaks

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	45 min	**Introduction** • Welcome • Agenda • Self-presentation of trainer • Self-presentation and expectations of participants • Introduction to workshop objectives & methods	• Participants get to know what the course will be about and how it will be implemented • Trainer and participants get to know each other • Creating a constructive and positive working atmosphere •	• Presentation	• Power Point Slides • Flipchart	• Trainer • Participants
Working phase 1	45 min	**Basics** • Financial plan definition • Typical elements • Financial plan as part of the project proposal (point in time, requirements etc. to approach the financial plan)	• Participants learn key elements and structure of financial plans • Participants learn about pre-conditions of approaching financial plans and how to	• Presentation • Brainstorming • Discussion • Group exercise	• Power Point Slides • Example of a financial plan	• Trainer • Participants

		• Analysing an example of a financial plan	integrate it in the process of composing a project proposal • Participants get an impression of the complexity and the high demands of financial plans			
Working phase 2	45 min	**Introduction to third-party funding & frame conditions of funders** • Contribution of financial plans to the acquisition of third-party funding • Introduction to means of funding and to third-party sponsors • Introduction to eligibility conditions, eligible costs, forms & types of financing • Exercise: eligibility conditions	• Participants get familiar with funding basics & different frame conditions, thereby getting an understanding for the context of designing financial plans • Participants learn what to consider and what to know prior calculation of project budgets	• Presentation • Brainstorming • Moderated group discussion • Small group exercise	• Power Point Slides • Flipchart	• Trainer • Participants • Small groups (3-5 participants each)
Working phase 3	45 min	**Cost Categories** • Direct vs. indirect costs • Introduction to direct costs: • Introduction to direct costs: staff costs, travel costs, material costs, equipment costs, costs for subcontracting, costs for conferences & trainings, etc. • Introduction to indirect costs (overhead) • Exercise: correctly assigning different costs to cost categories	• Participants get familiar with typical cost categories and how they are defined	• Presentation • Brainstorming • Moderated group discussion • Group exercise	• Power Point Slides • Example sheet with compilation of different costs	• Trainer • Participants • Entire group

Working phase 4	90 min	**Calculating Costs** • Challenges in cost calculation and typical mistakes • Introduction to cost models: budget calculation vs. unit-cost calculations • Calculation of staff costs: calculation of daily rates, calculation of the number of work days (exercise) • Calculation of travel, accommodation and food costs • Calculation of material costs and equipment costs • Calculation of costs for subcontracting • Calculation of costs for conferences & trainings • Calculation of indirect costs • Cost calculations in consortia • Feasibility check (realistic relation between planned project activities, budget and max. funding ceiling)	• Participants get familiar with cost calculation in different cost categories • Participants learn particularly the challenges in calculating staff costs and how to meet them • Participants learn basics in calculating realistic budgets	• Presentation • Brainstorming • Moderated group discussion • Group exercise	• Power Point Slides • Flipchart	• Trainer • Participants • Small groups (3-5 participants each)
Working phase 5	45 min	**Tools** • Introduction to the finance part of online proposal application systems (e.g. in Germany “easy-Online”, used for cost calculation by federal ministries)	• Participants get an overview in calculation tools and a first insight how they work	• Presentation • Moderated group discussion	• Power Point Slides • PC / internet	• Trainer • Participants • Small groups (3-5 participants each)

Working phase 6	90 min	**Exercise: Small example calculation on your own** • Calculating a budget with connection to an own project, alone or in a group of two • Evaluating a partner's calculation	• Participants practice how to calculate parts of a project budget • Participants apply new knowledge on budget calculation to an example • Participants transfer new knowledge to a real work context	• Presentation • Brainstorming • Group or individual exercise • Mutual feedback	• Power Point Slides • PC	• Trainer • Participants • Small groups (2 participants each)
Closing phase	45 min	**Evaluation and Closure** • Course evaluation • Outlook	• Quality assurance • Participants reflect on their learning outcomes	• Feedback circle („flashlight") • Online evaluation	• Online questionnaire	• Trainer • Participants

Post-course Phase

Course documentation to be sent to participants (photo protocol and presentations). Lessons learned, Evaluation Transfer evaluation

1 Nr. | Module

II Acquiring third party funds and projects

2 Nr. | Course Title

II-IV Concept Development

3 Course Format

Classroom teaching or online course

4 Key Data

Scope: 10 working units in class á 45 min. |1 ECTS points (recommendation)

8 Learning Outcomes

- Feel confident in composing different types of concepts as basic technique of scientific working
- Possess knowledge on criteria for high quality concepts and know how to apply them into own work practice
- Possess knowledge on planning and development
- Possess knowledge on design and structure
- Possess knowledge on presentational aspects
- Know how to transfer concepts into practice

6 Overall Contents

- Key aspects of drafting and formulating different types of concepts
- Criteria for a high-quality concept
- Developing concepts: From the idea to a well-structured concept
- Presenting appealing concepts
- Preparing concept implementation

7 Overview of Teaching Methods

Interactive presentation, brainstorming, moderated group discussions, small-group exercises, single task practical exercises

8 Target Group

Qualification phase, prior knowledge or experience

- Recommended for PhD students at the beginning of their qualification phase
- PhD students with little or no previous knowledge

9 Tipps for implementation | Adjustments

Group Size
For lager groups than 16 participants allow for up to 5 persons in the exercises. Consequently, the time for group work needs to be extended accordingly.

10 Course materials | Reading list

- Slides to be sent to the participants

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Break times: 60 min lunch break, 2x15 min coffee breaks

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	30 min	**Introduction** • Welcome • Agenda • Self-presentation of trainer • Self-presentation and expectations of participants • Introduction to workshop objectives & methods	• Participants get to know what the course will be about and how it will be implemented • Trainer and participants get to know each other • Creating a constructive and positive working atmosphere	• Interactive Presentation	• Power Point Slides • Flipchart	• Trainer • Participants
Working phase 1	15 min	**Basics** • What makes a concept? • Different types of concepts and how to tell them apart • The use of concepts • When to use concepts and which	• Participants learn about the different types of concepts and their respective functions • Participants know when to use a certain type of concept	• Plenary discussion • Brainstorming	• Power Point Slides • Flipchart	• Trainer • All Participants

Working phase 2	30 min	**Criteria for good concepts** • Innovative methods/products as key criterion for concepts • Unique selling points in concepts • How to convey goals • Keep the audience in mind!	• Participants are familiar with quality criteria • Participants are able to apply these to their own (research) concept	• Discussion in small groups • Interactive presentation	• Moderation cards • Flipchart • Power Point Slides	• Small groups of participants • Trainer • All Participants
Working phase 3	15 min	**Research concepts** • What distinguishes a research concept from other types of concepts? • Elements of research concepts	• Participants know the specific criteria of research concepts • Participants can identify the elements of research concepts	• Interactive Presentation • Plenary discussion	• Power Point slides	• Trainer • All Participants
Working phase 4	75 min	**Obstacles and how to overcome them** • Typical problems that (may) occur during the development of a concept • Time is scarce, or is it? • Creativity and how to trigger it	• Participants learn to identify obstacles • Participants are able to develop strategies to tackle concept problems	• Interactive Presentation • Plenary discussion • Exercise in small groups	• Moderation cards • Flipchart • Power Point Slides	• Trainer • Small groups of participants • All Participants
Working phase 5	115 min	**Procedure and workflow** • From scratch to concept – the steps to take • Importance of collecting and mapping information • Is there more to know? When to stop searching for more information	• Participants are familiar with the different phases of writing a concept • Participants learn techniques to gather, sort, interpret and prioritize information	• Interactive Presentation • Plenary discussion • Discussion in small groups • Graphic design • Individual work	• Moderation cards • Flipchart • Power Point Slides	• Trainer • All Participants • Small groups of participants

		• Hello, is there any creativity out there? – Finding strategies to trigger creativity • Preparing and writing (!) a concept • All the beautiful colours… How to make a concept compelling with graphics and figures	• Participants know how to find solutions with creative techniques • Participants are aware of the benefit of graphics for concepts • Participants are able to write reader-friendly, precise and concise concepts			
Working phase 6	60 min	**Analysis of a research concept** • Repetition of quality criteria • Analysing in small groups show cases of research concepts • What can be done better?	• Participants can transfer knowledge on quality criteria to practice • Participants are able to judge the quality of a concept • Participants know how to improve concepts	• Interactive Presentation • Exercise in small group • Plenary discussion	• Moderation cards • Flipchart • Power Point Slides • Show cases of research concepts	• Small groups of participants • All participants • Trainer
Closing phase	30 min	**Evaluation and Closure** • Course evaluation • Outlook	• Quality assurance • Participants reflect on their learning outcomes	• Feedback circle („flashlight“) • Online evaluation	• Online questionnaire	• Trainer • All Participants

Post-course Phase

Course documentation to be sent to participants (photo protocol and presentations). Lessons learned, Evaluation Transfer evaluation

Module III: Project Management

1 Nr. | Module

III – Project management

2 Nr. | Course Title

III – 1: Project Management Fundamentals

3 Course Format

The course will be taught with a blended learning approach, optional as a classroom teaching or online course.

4 Key Data

Scope (class hours): 20 working units á 45 min.
ECTS: 2 (recommended)

5 Learning Outcomes

- Ability to implement and manage every aspect of a project
- Gain a basic understanding of project management
- Be familiar with general project management approaches and methodologies
- Be able to apply basic management methods and techniques to different types of projects
- Know how to build and manage project scheduling
- Be familiar with the project management toolbox

6 Overall Contents

- Introduction of main terminology
- Research approaches to project management studies
- Overview of project types and project management phases
- Analysis of initial situation, relevant stakeholders, goals and risks
- Project planning (activities/ work packages, scheduling, resource and cost planning, project organisation)
- Project management methodologies (PMBoK, PRINCE2)
- Toolbox for project management: IT systems, scheduling, scope control (e.g. CPM/PERT, PERT-COST, GERT)
- Project control (meeting milestones, adapting activities and efforts, controlling expenses, deadlines and costs, project documentation and reporting)
- Project completion (experiential learning, post-project documentation)

7 Overview of Teaching Methods

- Expert input
- Case studies
- Reflection and discussion
- Individual exercises and group work
- Online learning platforms
- Online content and assignments (application of software)
- Exchange of experience

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience

- PhD students with little or no previous knowledge.
- Participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions by webinars. It is very important to give students and example of usage of presented tool and techniques, but also to give them the opportunity to test their understanding in a project work.

10 Course materials / reading list

The slides and case studies will be distributed at least at the beginning of the course.

Recommended literature:

- Kerzner, H. (2017). Project management: a systems approach to planning, scheduling, and controlling, 12th Edition, John Wiley & Sons.
- Turner J.R. (2014). The handbook of project-based management. Leading strategic change in organizations, 14th Edition, McGraw-Hill Education.
- Morris, P. W., Pinto, J. K., & Söderlund, J. (Eds.). (2012). The Oxford handbook of project management, Oxford University Press.

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	10 min	• Welcome • Introduction to the module • Self-presentation of trainer • Self-presentation of cotrainer	• Creating a good working atmosphere • Presenting the module idea • Presenting the competences of trainers	• Slide Presentation	• Power Point Slides	• Trainer • CoTrainer
	35 min	• Agenda of the course • Short presentation of the course content (objectives and learning outcomes) • Time schedule of the course • Self-presentation of participants	• Sharing with scope of the course • Presenting possible benefits from participation in the course • Participants get to know each other	• Slide Presentation	• Power Point Slides	• Trainer • All participants
Working phase 1	60 min	**Fundamentals of Project Management:** • Introduction to management as science and empirical field	• Introducing the basic knowledge related to PM	• Slide Presentation • Moderated group discussion • Case studies	• Power Point Slides	• Trainer • All participants

		• Project Life Cycle vs Product Life Cycle • Project processes • Project Management (PM) Life Cycles - approaches: traditional, agile, hybrid, extreme	• Gaining a basic understanding of project management	• Reflection and discussion		
	45 min	**Application of Project Management (PM) for researchers' purposes:** • Benefits from utilization of PM knowledge by researchers • Project Environment (4P) vs Research Environment: Project, Program, Portfolio, Project-based organization • Research projects and other project types • Research project and program success criteria & factors	• Demonstrating that PM can support research work • Gaining a basic understanding of project management • Sharing terminology and basic concepts	• Slide Presentation • Moderated group discussion • Expert input • Case studies • Reflection and discussion • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Working phase 2	60 min.	**Project Management Standardization – what can be applied in research projects:** • Overview of project management standardization • Examples of traditional approaches: PMBoK, Prince 2, PCM, APM etc.	• Demonstrating that PM can support research work • Preparing to be familiar with general project management standards - approaches and methodologies	• Slide Presentation • Moderated group discussion • Case studies • Reflection and discussion	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
	45 min	• Examples of agile approaches: Scrum, Kanban, DSDM	• Preparing to be familiar with general project management standards	• Slide Presentation • Moderated group discussion	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

		• Mixing the approaches	- approaches and methodologies	• Case studies • Individual exercises and group work		
Closing day 1	15 min	• Summary of the presented topics – part 1 • Discussion related to the application of PM knowledge for researchers needs	• Reflecting upon the disused topic and issues • Summarizing the crucial PM knowledge relevant to discussed topics	• Reflection and discussion	• Power Point Slides	• Trainer • CoTrainer • All participants

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Working phase 3	15 min	• Repetition from the previous day	• Introducing to the next PM topics	• Discussion	• None	• Trainer • All participants
	75 min	**Project initiation - how to describe our research project? - workshop** • Project charter • Project Organizational Structure • Work Breakdown Structure • Product Breakdown Structure – focusing on products • Project scope management	• Being able to apply basic management methods and techniques to different types of projects • Knowing how to design WBS, PBS and defining the project scope • Preparing to be familiar with the project management toolbox supported project description	• Slide Presentation • Moderated group discussion • Case studies • Individual exercises and group work • Online content and assignments (application of software) • Exchange of experience	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants

Working phase 4	90 min	**Time management - how to schedule research project? - workshop** • Project plan – defining activities • Project schedule – defining sequences of activities, durations, schedule • Peculiarities of R&D project scheduling • Project schedule toolbox (CPM/PERT, PERT-COST, Milestones etc.) • Time management – progress monitoring (scope, objectives, toolbox) • ICT supporting tools e.g.: Gantt Project, Project Libre, MS Project	• Being able to apply basic management methods and techniques to different types of projects • Knowing how to build and manage project scheduling • Preparing to be familiar with the project management toolbox supported scheduling, including ICT	• Slide Presentation • Moderated group discussion • Case studies • Individual exercises and group work • Online content and assignments (application of software) • Exchange of experience	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants
Working phase 5	75 min	**Resource management – what kind of resources do I need for my research? -workshop** • Project resources: human, non-human • Project procurement • Resources and procurement in R&D projects • Project resources and procurement management • Project procurement governance • Contract management & administration	• Being able to apply basic management methods and techniques to different types of projects • Knowing how to assign resources to various project activities • Knowing how to organising procurement process and • Knowing how to utilise the contract conditions in context • Preparing to be familiar with the project	• Slide Presentation • Moderated group discussion • Case studies • Individual exercises and group work • Online content and assignments (application of software) • Exchange of experience	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants

			management toolbox supported resource management			
Closing half of the day 2	15 min	• Summary of the presented topics – part 2 • Discussion related to the project initiation and design	• Reflecting upon the disused topic and issues • Summarizing the crucial PM knowledge relevant to discussed topics	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Lunch break

Working phase 6	90 min	**Cost and benefits management – how to calculate cost of research project? - workshop** • Project costs • Project budget • Project benefits • Peculiarities of R&D costs and benefits analysis • Cost&revenue management • Performance measurement and management e.g. Earned Value Management, Percentage of Completion, Costs&Benefits Analysis • ICT supporting tools e.g. MS Excel, MS Project, ERP systems, Power BI	• Being able to apply basic management methods and techniques to different types of projects • Knowing how to prepare costs and benefits initial calculation • Knowing how to monitor and control costs and benefits of running projects • Knowing how to calculate project percentage of completion • Preparing to be familiar with the project management toolbox supported costs and benefits management	• Slide Presentation • Moderated group discussion • Case studies • Individual exercises and group work • Online content and assignments (application of software) • Exchange of experience	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants

Working phase 7	90 min	**Risk management – how we can manage by threats and opportunities related to our research project? - workshop** • Conditions of risk and uncertainty • Types and sources of risk issues • Peculiarities of R&D project risk • Risk management framework • Risk matrix, scenarios • Considering risk in Costs&Benefits Analysis e.g. Expected Monetary Value	• Being able to apply basic management methods and techniques to different types of projects • Knowing how to recognise and assess project threats and opportunities • Preparing to be familiar with the project management toolbox supported risk management	• Slide Presentation • Moderated group discussion • Case studies • Individual exercises and group work • Online content and assignments (application of software) • Exchange of experience	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants
Working phase 8	30 min	**Stakeholders management – who is interested in our research projects? - workshop** • Project / program stakeholders • Peculiarities of R&D project stakeholders management • Stakeholders impact - monitoring&meauring • Adaptation and balance stakeholders needs	• Being able to apply basic management methods and techniques for stakeholders management • Knowing how to recognise stakeholders needs • Preparing to be familiar with the project management toolbox supported stakeholders management	• Slide Presentation • Moderated group discussion • Case studies • Individual exercises and group work • Online content and assignments (application of software) • Exchange of experience	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants
Closing day 2	15 min	• Summary of the presented topics – part 3 • Discussion related to the project monitoring and control	• Reflecting upon the disused topic and issues • Summarizing the crucial PM knowledge relevant to discussed topics	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Day 3

Working phase 9	45 min	**Project governance – how university can govern our research projects?** • Project supply chain • Project governance – scope and objectives • Strategy of R&D projects • Client / sponsor supervision • Parent organization (e.g. university) supervision	• Preparing to be familiar with project governance – assessing project from different approaches, stakeholders • Knowing how to design project strategy that follows company strategy • Preparing to be able to monitor and control project	• Slide Presentation • Moderated group discussion • Expert input • Case studies • Reflection and discussion	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Working phase 10	30 min	**Program management – how to combine several research projects?** • Program vs project management • Program Life Cycle Management • Program benefits management • Program governance	• Preparing to be familiar with projects integration • Knowing how to manage programs	• Slide Presentation • Moderated group discussion • Expert input • Case studies • Reflection and discussion	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
	45 min	**Portfolio management – our project is not an island at university** • Fundamentals of portfolio management • Strategy of portfolio management and permanent	• Preparing to be familiar with project portfolio management • Knowing how to create portfolio strategy • Preparing to be able to monitor and control various projects	• Slide Presentation • Moderated group discussion • Expert input • Case studies • Reflection and discussion	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

		organization strategy (selection of portfolio elements etc.) • Projects prioritising • Assigning resources to the project • Portfolio reporting	• Preparing to be able to prioritise projects	• Individual exercises and group work		
Closing the course	15 min	• Q&A about the presented topics and feedbacks collections	• Clarifying contents and collect information for mindSET project improvements	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Post-course phase

Project work to be completed until 2 weeks after the course. To be uploaded on learning platform.

1 Nr. | Module

III – Project management

2 Nr. | Course Title

III – 2: Self and Time Management

3 Course Format

The course will be taught with a blended learning approach, optional as a classroom teaching or online course.

4 Key Data

Scope (class hours): 15 working units á 45 min.
ECTS: 1 (recommended)

5 Learning Outcomes

- Gain awareness of one's resources, goals and priorities
- Gain awareness of one's personal time bandits and ways to overcome them
- Know how to set goals and prioritise tasks
- Become familiar with a set of efficient time management tools

6 Overall Contents

- Reflections on working styles: individual strengths and resources
- Individual goals and priorities
- Fundamentals of positive psychology
- Individual time bandits (e.g. procrastination) and ways to overcome them
- Time management tools (e.g. milestone planning)
- Self- and time management essentials
- Work-life balance

7 Overview of Teaching Methods

- Practice-oriented input
- Interactive and practical exercises
- Individual and group work
- Reflection, discussions and exchange of experiences
- Online learning platform
- Online assignments

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience

- PhD students after the course Project Management Fundamentals
- Participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions by webinars. It is very important to give students and example of usage of presented tool and techniques, but also to give them the opportunity to test their understanding in a project work.

10 Course materials / reading list

The slides and case studies will be distributed at least at the beginning of the course.

Recommended literature:

- Kerzner, H. (2017). Project management: a systems approach to planning, scheduling, and controlling, 12th Edition, John Wiley & Sons.
- IPMA (2015). Individual Competence Baseline for Project, Programme & Portfolio Management, 4th Ver., IPMA Global Standard.
- PMI (2019). Practice Standard for Scheduling – Third Edition.

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	10 min	• Welcome • Introduction to the module • Self-presentation of trainer • Self-presentation of cotrainer	• Creating a good working atmosphere • Presenting the module idea • Presenting the competences of trainers	• Slide Presentation	• Power Point Slides	• Trainer • CoTrainer
	35 min	• Agenda of the course • Short presentation of the course content (objectives and learning outcomes) • Time schedule of the course • Self-presentation of participants	• Sharing with scope of the course • Presenting possible benefits from participation in the course • Participants get to know each other	• Slide Presentation	• Power Point Slides	• Trainer • All participants
Working phase 1	5 min	**Revision of project management knowledge**	• Reviewing the knowledge related to PM	• Slide Presentation	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

		• Application of Project Management (PM) Knowledge in research • Project Life Cycle, Project processes, project success criteria and factors • PMBoK&ISO 21500 Knowledge areas in project management, including human resources management • PRINCE2 Principles of project management from human perspective	• Preparing to be familiar with PM standards	• Discussions and exchange of experiences		
	45 min	**Organizational preparation of research projects** • Project organizational Structure • Roles and responsibilities in Project Management, toolbox for work organization e.g. RACI • how can I organize my work in research project?	• Knowing how to design organisational structures • Knowing how to describe the roles in projects • Preparing to be familiar with a set of tools supported responsibility description	• Slide Presentation • Interactive and practical exercises • Individual and group work • Discussions and exchange of experiences • Online learning platform	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
	45 min	**Management and working styles** • General overview of management styles • Working styles in traditional and agile teams	• Delivering knowledge about working and management styles • Knowing how to work in group and manage it	• Slide Presentation • Practice-oriented input • Interactive and practical exercises • Individual and group work • Discussions and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

Working phase 2	15 min	**Introduction to competences** • Competences of research project team members (knowledge, skills, abilities) • Competences vs achievements of selected project management schools: behaviour, decision, relationship, contingency – project conditions vs human behaviour	• Reviewing the knowledge related to competences • Gaining awareness of role of competences in PM • Preparing to be familiar with a set of tools supported competence development	• Slide Presentation • Practice-oriented input • Interactive and practical exercises • Individual and group work • Discussions and exchange of experiences •	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
	30 min	**Technical skills in research project** • Definition & classification of technical skills • Skills related to project: planning, execution, monitoring, control etc. • Time management methods • Language skills • Skills related to organizational toolbox • ICT skills (software & hardware proficiency) • Technical knowledge	• Knowing how to define the competences • Knowing how to assign competences to working place • Preparing to be familiar with technical skills required in PM	• Slide Presentation • Practice-oriented input • Interactive and practical exercises • Reflection, discussions and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
	90 min	**Soft skills in research project** • Definition & classification of soft skills • Self-reflection and self-management	• Knowing how to define the competences • Knowing how to assign competences to working place	• Slide Presentation • Practice-oriented input • Interactive and practical exercises • Reflection, discussions and	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

		• Leadership (styles and leadership competences) • Teamwork • Change management • Conflict and crisis management • Negotiation	• Preparing to be familiar with soft skills required in PM	exchange of experiences		
Working phase 3	90 min	**Competence management** • Individual competence development • Team competence development • Organizational competence development • Methods supported competence development: education, training, coaching, mentoring • Competence development stakeholders: teachers, educators, trainers, direct supervisor, HR department	• Knowing how to manage the competences • Knowing how to develop the competences • Preparing to be familiar with methods and techniques supported competence development	• Slide Presentation • Practice-oriented input • Interactive and practical exercises • Reflection, discussions and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Closing day 1	15 min	• Summary of the presented topics – part 1 • Discussion related to the competence development among members of research project team	• Reflecting upon the disused topic and issues • Summarizing the crucial PM knowledge relevant to discussed topics	• Reflection and discussion	• Power Point Slides	• Trainer • CoTrainer • All participants

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Working phase 4	120 min	**Workshop A related to Time Management:** • Time management in projects vs personal time management – introduction to workshop Workshop following the example from the course Fundamentals of Project Management: • Selecting research project for workshop • Updating the activities and resources • Mixing activities with resources • Activities rescheduling (utilization of: duration estimation, Precedence Diagramming Method, Dependency Determination etc.) • Redefining the milestones • Performance monitoring • Presentations and discussion of the results	• Gaining awareness of one's resources, goals and priorities • Gaining awareness of one's personal time bandits and ways to overcome them • Preparing to be familiar with update the schedule	• Slide Presentation • Practice-oriented input • Interactive and practical exercises • Individual and group work • Reflection, discussions and exchange of experiences • Online assignments	• Power Point Slides • Excel template	• Trainer • CoTrainer • All participants

Lunch break

Working phase 5	120 min	**Workshop B related to Self-Management:** • Introduction to self-Management and workshop Workshop (continuation of workshop A): • Defining own task related to project deliverables and other responsibilities allocation • Designing the tools for performance measurement of own tasks • Planning execution of own tasks, including activities prioritising (toolbox e.g. MoSCoW technique) • Presentations and discussion of the results	• Gaining awareness of one's resources, goals and priorities • Gaining awareness of one's personal time bandits and ways to overcome them • Preparing to be familiar with task definition etc.	• Slide Presentation • Practice-oriented input • Interactive and practical exercises • Individual and group work • Reflection, discussions and exchange of experiences • Online assignments	• Power Point Slides • Excel template	• Trainer • CoTrainer • All participants
Closing of workshop	15 min	• Q&A about the presented topics and feedbacks collections	• Clarifying contents and collect information for mindSET project improvements	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Post-course phase

Project work to be completed until 2 weeks after the course. To be uploaded on learning platform.

1 Nr. | Module

III – Project management

2 Nr. | Course Title

III – 3: Knowledge Management

3 Course Format

The course will be taught with a blended learning approach, optional as a classroom teaching or online course.

4 Key Data

Scope (class hours): 20 working units á 45 min.
ECTS: 1 (recommended)

5 Learning Outcomes

- Know fundamentals of personal and project knowledge management
- Know how to categorise knowledge
- Be familiar with different models, methods and technical solutions for personal and project knowledge management
- Know how to develop a knowledge management plan
- Know how to deal efficiently with complex information and knowledge structure

6 Overall Contents

- Fundamentals of knowledge management: principles of learning and memory
- Challenges, tasks and models of personal knowledge management and knowledge management in project teams
- Tools of personal and project knowledge management
- Grouping and sorting knowledge and data
- Development of a knowledge management plan/concept
- Visual techniques (mind mapping, concept mapping, i-mapping, spatial hypertext, etc.)
- Knowledge databases/ technical tools (wikis, etherpads, etc.)

7 Overview of Teaching Methods

- Expert input
- Working on participants' examples
- Discussion of case studies (good practice)
- Individual and group work
- Reflection, discussions and exchange of experiences
- Online learning platform
- Online content and assignments

8 Target Group

Qualification phase

- Recommended: PhD students after the course Project Management Fundamentals

Prior knowledge or experience

- PhD students with basic knowledge related to Project Management
- Participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions by webinars. It is very important to give students and example of usage of presented tool and techniques, but also to give them the opportunity to test their understanding in a project work.

10 Course materials / reading list

The slides and case studies will be distributed at least at the beginning of the course.

Recommended literature:

- Liebowitz, J. (2001). Knowledge management: Learning from knowledge engineering. CRC Press.
- Hanisch, B., Lindner, F., Mueller, A., & Wald, A. (2009). Knowledge management in project environments. Journal of Knowledge Management, 13(4), pp. 148-160.
- PMI (2017). A Guide to the Project Management Body of Knowledge. PMBoK Guide, Sixth Edition.
- Gasik, S. (2011). A model of project knowledge management. Project Management Journal, 42(3), pp. 23-44.
- Kasvi, J. J., Vartiainen, M., & Hailikari, M. (2003). Managing knowledge and knowledge competences in projects and project organisations. International Journal of Project Management, 21(8), pp. 571-582.

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	10 min.	• Welcome • Introduction to the module • Self-presentation of trainer • Self-presentation of cotrainer	• Creating a good working atmosphere • Presenting the module idea • Presenting the competences of trainers	• Slide Presentation	• Power Point Slides	• Trainer • CoTrainer
	35 min	• Agenda of the course • Short presentation of the course content (objectives and learning outcomes) • Time schedule of the course • Self-presentation of participants	• Sharing with scope of the course • Presenting possible benefits from participation in the course • Participants get to know each other	• Slide Presentation	• Power Point Slides	• Trainer • All participants
Working phase 1	60 min	**Introduction to knowledge management**	• Providing terminology related to DI&K • Delivering fundamentals of	• Slide Presentation • Expert input	• Power Point Slides •	• Trainer • All participants

		• Definitions and differences between: data, information, knowledge (DI&K) • Types of knowledge (tacit vs. explicit) • Knowledge management (KM) processes and Life Cycle • Knowledge management models • Knowledge sharing in organization • Research studies related to utilization of knowledge management in organizations	knowledge management • Understanding the concept of knowledge management in research projects	• Working on participants' examples • Discussion of case studies (good practice)		
	45 min	**Revision of project management (PM) knowledge** • Application PM knowledge in research project • Project Life Cycle, Project processes, project success criteria and factors • Project Management Life Cycles (PMLC) - approaches: traditional, agile, hybrid, extreme • Project-Based Organizations (PBO) • Peculiarities of research projects	• Providing terminology related to DI&K in project environment • Delivering fundamentals of project knowledge management areas • Knowing how to categorise knowledge in project environment	• Slide Presentation • Discussion of case studies (good practice) • Discussions and exchange of experiences •	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Working phase 2	45 min	**Introduction to knowledge management in research project environment**	• Understanding the need of data, information, knowledge exchange in organisation	• Slide Presentation • Working on participants' examples	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

		• Data, information, knowledge & experience in projects – scope, quality, meaning for company development and market competitiveness • Information asymmetry in project	• Delivering fundamentals of information asymmetry in project environment	• Discussion of case studies (good practice)		
	30 min	**Information and Knowledge in PM (Project Management) standards** • Outlook of traditional approaches: PMBoK, PRINCE2, ISO21500, APM, • Outlook of agile approaches: Scrum, Agile PM, DSDM etc.	• Providing good practices related to project knowledge management areas • Understanding various approaches in knowledge management related to traditional and agile approaches	• Slide Presentation • Working on participants' examples • Reflection, discussions and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Closing day 1	15 min	• Summary of the presented topics – part 1 • Discussion related to the importance of DI&K for research project purposes	• Reflecting upon the disused topic and issues • Summarizing the crucial PM knowledge relevant to discussed topics	• Reflection and discussion	• Power Point Slides	• Trainer • CoTrainer • All participants

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Working phase 3	75 min	**Monitoring and controlling DI&K** • Methods and techniques supporting monitoring, collecting and controlling of data, information and	• Providing terminology related to DI&K • Knowing how to develop a knowledge management plan	• Slide Presentation • Working on participants' examples	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

		knowledge: corporate reporting, corporate accounting, project controlling, HR systems etc. • ICT supported KM: ERP, BI systems, project monitoring and controlling software etc.	• Knowing how to prepare DI&K monitoring, collecting, controlling etc. • Preparing to be familiar with different ICT	• Discussion of case studies (good practice)		
	30 min	**Recording DI&K** • Methods and techniques supporting recording DI&K e.g.: lessons learned log, pyramid ex post • ICT tools supporting: data bases, ERP, DMS, CRM etc.	• Preparing to be familiar with different models, methods and technical solutions for project knowledge management • Knowing how to develop a knowledge management system	• Slide Presentation • Working on participants' examples • Discussion of case studies (good practice) • Reflection, discussions and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
	30 min	**Sharing DI&K** • Sharing DI&K in one-cultural environment • Sharing DI&K in multicultural environment • Methods and techniques supporting sharing DI&K e.g.: trainings, F2F meetings, virtual conferences etc. • ICT tools supporting: mail, share point, Teams, Skype, Trello etc.	• Preparing to be familiar with knowledge sharing • Knowing how to inform the project team • Demonstrating how to work in international environment	• Slide Presentation • Working on participants' examples • Discussion of case studies (good practice)	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

Closing first half of the day 2	15 min	• Summary of the presented topics – part 2 • Discussion related to the project controlling	• Reflecting upon the disused topic and issues • Summarizing the crucial PM knowledge relevant to discussed topics	• Reflection and discussion	• Power Point Slides	• Trainer • CoTrainer • All participants

Lunch break

Working phase 4	60 min	**Organizational Project Management (OPM)** • Idea of OPM • Objectives of knowledge management: performance improving, innovation creation, sharing lesson learned, documenting best practices, processes integration, organizational continuous improvement)	• Providing terminology related to OPM • Delivering fundamentals of OPM • Understanding the role of KM in organisation	• Slide Presentation • Working on participants' examples • Discussion of case studies (good practice)	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
	60 min	**Project Management Office (PMO)** • Organizational structure & processes supporting knowledge management in PBO • Role of PMO (Project Management Office) in knowledge management – who is PMO at university? • Allocation of PMO in organizational structure	• Providing terminology related to PMO • Understanding the role of PMO • Knowing how to support the project from methodological point of view • Knowing how to deal efficiently with complex information and knowledge structure	• Slide Presentation • Working on participants' examples • Discussion of case studies (good practice) • Individual and group work • Reflection, discussions and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • CoTrainer • All participants

		• How to collaborate with PMO by research project				
Working phase 5	60 min	**Project Management Maturity (PMM)** • Process management maturity of non-profit organization (example of university) • Project management maturity of non-profit organization • Project Management Maturity Models (Kerzner, OCGP3M3, OPM3 etc.) – is it possible to adapt the approach in University or other organization?	• Understanding processes in projects • Developing KM in organisations • • Knowing how to categorise knowledge in project environment • Applying knowledge management in project environment • Preparing to be familiar with different PMM standards	• Slide Presentation • Working on participants' examples • Discussion of case studies (good practice)	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
	60 min	**Data information reporting** • Organization of project reporting – scope, frequency, quality, data flow etc. – what and who to report about the progress of research project? • Report visualisation – stakeholders, requirements, supporting tools (mind mapping, concept mapping etc.) - how to report about the progress of research project? - workshop • ICT supporting project reporting process	• Providing reporting good practice • Understanding the client needs • Understanding the role of data visualisation	• Slide Presentation • Working on participants' examples • Discussion of case studies (good practice) • Individual and group work • Reflection, discussions and exchange of experiences	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants

Working phase 6	30 min	**Confidential DI&K in organization** • Peculiarities of confidential DI&K in project, program, portfolio, and PBO – are our research idea confidential? • Securing of confidential DI&K – frameworks, procedures, protection methods • Human factor in management of confidential DI&K	• Understanding the data protection • Demonstrating the methods of data presentation • Perceiving the role of human factor in DI&K management	• Slide Presentation • Working on participants' examples • Discussion of case studies (good practice) • Individual and group work	• Power Point Slides • Flip charts & post-its	• Trainer • CoTrainer • All participants
Closing day 2	15 min	• Summary of the presented topics – part 3 • Discussion related to the organizational solutions in knowledge management of research projects	• Reflecting upon the disused topic and issues Summarizing the crucial PM knowledge relevant to discussed topics	• Reflection and discussion	• Power Point Slides	• Trainer • CoTrainer • All participants

Day 3

Working phase 7	90 min	**Best practice of DI&K utilization - workshop** • Utilization of project knowledge / experience in tender stage / scholarship submission preparation • Utilization of project knowledge / experience for project optimization • Designing of the DI&K system for our research project	• Knowing what is DI&K for project management • Knowing how to utilise DI&K for project management • Applying knowledge management in project environment	• Slide Presentation • Working on participants' examples • Discussion of case studies (good practice) • Individual and group work • Reflection, discussions and	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

				• exchange of experiences •		
Working phase 8	90 min	**Self-management of DI&K - workshop** • Planning • Organizing • Monitoring and Recording • Collecting and Prioritizing • Data analizing and assessing • Data and information reporting • Utilizing the information and knowledge for project development	• Providing terminology related to self-engagement • Adapting project approach to own work	• Expert input • Discussion of case studies (good practice)	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Working phase 9	30 min	**Summary of knowledge management factors:** • technical aspects: information systems, and project management methods and techniques etc. • psychological aspects: openness, sensitivity, intuitiveness etc. • cultural aspects: traditions, work culture etc.	• Understanding interdisciplinary aspects of KM	• Slide Presentation • Expert input • Working on participants' examples • exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • CoTrainer • All participants
Closing the course	15 min	• Q&A about the presented topics and feedbacks collections	• Clarifying contents and collect information for mindSET project improvements	• Reflection and discussion	None	• Trainer • CoTrainer • All participants

Post-course phase

Project work to be completed until 2 weeks after the course. To be uploaded on learning platform.

1 Nr. | Module

III – Project management

2 Nr. | Course Title

III – 4: Delegation and Meeting Organisation

3 Course Format

The course will be taught with a blended learning approach, optional as a classroom teaching or online course.

4 Key Data

Scope (class hours): 10 working units á 45 min.
ECTS: 1 (recommended)

5 Learning Outcomes

- Know how to delegate and control task performance
- Know the challenges of a potential mismatch between role, responsibility and authority and how to overcome them
- Know how to organise an effective project team meeting
- Be familiar with tools for ensuring effective project team communication

6 Overall Contents

- Fundamentals of task delegation
- Situational leadership
- Obstacles to delegation (roles, responsibility and authority, etc.)
- Efficient task selection and precise target setting
- Delegation techniques and practical implementation
- Criteria for selecting employees
- Constructive feedback
- Organisation of project team meetings (classic vs. virtual/distributed)
- Tools for effective project team communication
- The project management office

7 Overview of Teaching Methods

- Practice-oriented
- Practice-oriented input
- Case studies
- Individual and group exercises (role plays, etc.)
- Reflections and exchange of experiences

8 Target Group

Qualification phase

- Recommended: PhD students after the courses from III-1 and III-2

Prior knowledge or experience

- PhD students with knowledge related to Project Management Fundamentals and Self- and Time Management
- Participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions by webinars. It is very important to give students and example of usage of presented tool and techniques, but also to give them the opportunity to test their understanding in a project work.

10 Course materials / reading list

The slides and case studies will be distributed at least at the beginning of the course.

Recommended literature:

- Kerzner, H. (2017). Project management: a systems approach to planning, scheduling, and controlling, 12th Edition, John Wiley & Sons.
- Mueller, R., & Turner, J. R. (2017). Project-oriented leadership. Routledge.
- Burke, R., & Barron, S. (2007). Project management leadership. Burke publishing.
- Maqbool, R., Sudong, Y., Manzoor, N., & Rashid, Y. (2017). The impact of emotional intelligence, project managers' competencies, and transformational leadership on project success: An empirical perspective. Project Management Journal, 48(3), pp. 58-75.

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	10 min	• Welcome • Introduction to the module • Self-presentation of trainer • Self-presentation of cotrainer	• Creating a good working atmosphere • Presenting the module idea • Presenting the competences of trainers	• Slide Presentation	• Power Point Slides •	• Trainer • Cotrainer
	35 min	• Agenda of the course • Short presentation of the course content (objectives and learning outcomes) • Time schedule of the course • Self-presentation of participants	• Sharing with scope of the course • Presenting possible benefits from participation in the course • Participants get to know each other	• Slide Presentation	• Power Point Slides	• Trainer • All participants
Working phase 1	45 min	**Revision of project management knowledge**	• Delivering revised knowledge related to Project Management (PM)	• Slide Presentation • Case studies	• Power Point Slides	• Trainer • All participants

		• Outlook of knowledge related to project and program • Outlook of knowledge related to projects portfolio and project-based organization • Project Life Cycle, Project processes, project success criteria and factors • Human resources in project environment – PMBoK, PRINCE2, IPMA and APM	• Describing the role of human resources in project, including research project	• Reflections and exchange of experiences		
Working phase 2	45 min	**Management of Project Team** • Project team (PT) role • Trust vs control related to PT • Management of project team members – management style, delegation, responsibilities assigning etc.	• Delivering knowledge related to HRM (Human Resources Management) in project environment • Preparing to be familiar with management styles and fundamentals of cooperation and communication inside PT	• Slide Presentation • Case studies • Individual and group exercises (role plays, etc.) • Reflections and exchange of experiences	• Power Point Slides • Flip charts & post-its • Essay related to project team work	• Trainer • All participants
	45 min	**Design of Project team** • Organizational structures of project teams • Building PT -recruitment process inside permanent organization vs outside recruitment • How to build the research project team ? – workshop related to recruitment and	• Knowing how to design of PT organizational structures • Knowing how to recruit the members of PT • Preparing to be familiar with description of the responsibilities in PT • Knowing the challenges of a potential mismatch between role,	• Slide Presentation • Case studies • Individual and group exercises (role plays, etc.) • Reflections and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

		assignment of responsibilities	responsibility and authority and how to overcome them			
Working phase 3	45 min	**Leadership** • Project leadership theories • Project leadership skills, including emotional intelligence • Project leadership styles	• Knowing the difference between manager and leader • Preparing to be familiar with leadership role in projects	• Slide Presentation • Case studies • Individual and group exercises (role plays, etc.) • Reflections and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Closing day 1	15 min	• Summary of the presented topics – part 1 • Discussion related to the role of PT in project success	• Reflecting upon the disused topic and issues • Summarizing the crucial PM knowledge relevant to discussed topics	• Reflection and discussion	• Power Point Slides	• Trainer • CoTrainer • All participants •

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Working phase 4	15 min	Repetition from the previous day	• Introducing to the next PM topics	• Discussion	• None	• Trainer • All participants
	45 min	**Project Communication** • Communication planning • Communication managing • Communication monitoring • Communication in international environment • Toolbox supporting communication	• Delivering knowledge related to communication in project environment • Knowing how to manage of communication process • Knowing the challenges of a potential mismatch	• Slide Presentation • Case studies • Reflections and exchange of experiences	• Power Point Slides • Flip charts & post-its • Presentation of various ICT supporting communication in project	• Trainer • All participants

		• ICT supporting project communication	between role, responsibility and authority and how to overcome them • Preparing to be familiar with ICT supporting communication			
	45 min	**Negotiation in Projects** • Negotiation strategies • Negotiation between PT members • Contract negotiation with the client (project tendering stage) • Contract negotiation with other stakeholders e.g. subcontractor (project execution stage) • Contract administration	• Knowing how to organise in an effective manner project team meeting • Preparing to be familiar with negotiation strategies	• Slide Presentation • Case studies • Individual and group exercises (role plays, etc.) • Reflections and exchange of experiences	• Power Point Slides	• Trainer • All participants
	45 min	**Conflict management** • Work in stressful conditions • Ethics in project management • Conflict management	• Knowing how to recognise the conflict situation • Knowing how to manage the conflicts in project team and outside • Preparing to be familiar with possible reaction in conflict situations	• Slide Presentation • Case studies • Individual and group exercises (role plays, etc.) • Reflections and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
	45 min	**Meeting organisation** • Fundamentals of meeting (objectives, form etc.) • Managing of traditional meeting	• Knowing how to organise an effective project team meeting (traditional and agile) • Knowing how to organise an effective	• Slide Presentation • Case studies • Individual and group exercises (role plays, etc.)	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

		• Supporting of agile meeting • Project kick-off meeting • Operational project team meetings • Steering committee meeting	steering committee meeting	• Reflections and exchange of experiences		
Closing of the course	15 min	• Q&A about the presented topics and feedbacks collections	• Clarifying contents and collect information for mindSET project improvements	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Post-course phase

Project work to be completed until 2 weeks after the course. To be uploaded on learning platform.

1 Nr. | Module

III – Project management

2 Nr. | Course Title

III – 5: Agile Project Management

3 Course Format

The course will be taught with a blended learning approach, optional as a classroom teaching or online course.

4 Key Data

Scope (class hours): 10 working units á 45 min.
ECTS: 1 (recommended)

5 Learning Outcomes

- Know modern approaches to project management in dynamically changing environments
- Be familiar with the basics, attitudes, approaches and tools of agile project management
- Know roles and responsibilities in agile project management teams and how to enable cooperation and commitment

6 Overall Contents

- User contexts and differences between traditional and agile project management (benefits and challenges)
- Specifics of project management in fuzzy and dynamically changing environments
- Managing projects in an agile manner
- Agile methods (user stories, timeboxing, increments, sprint backlog, burndown chats, etc.)
- Adaptive planning and development
- Agile project management with Scrum
- Agile project management with digital tools: e.g. Trello
- Development of new solutions with design thinking
- Roles, responsibility, cooperation and commitment in agile teams

7 Overview of Teaching Methods

- Expert lectures
- Case studies
- Individual and group work
- Presentations
- Discussion and exchange of experiences
- Use of online tools
- Online assignments

8 Target Group

Qualification phase
- Recommended: PhD students after the courses III-1 and III-3

Prior knowledge or experience

- PhD students with knowledge related to Project Management Fundamentals and Knowledge Management
- Participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions by webinars. It is very important to give students and example of usage of presented tool and techniques, but also to give them the opportunity to test their understanding in a project work.

10 Course materials / reading list

The slides and case studies will be distributed at least at the beginning of the course.

Recommended literature:

- Kerzner, H. (2017). Project management: a systems approach to planning, scheduling, and controlling, 12th Edition, John Wiley & Sons.
- PMI, (2017), Agile Practice Guide.
- Axelos, (2015), PRINCE2 Agile.
- Sutherland, J., & Schwaber, K. (2013). The scrum guide. The definitive guide to scrum: The rules of the game. Scrum. Org

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Day 1

Course Phase	Time| Duration (min.)	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	15 min	• Welcome • Introduction to the module • Self-presentation of trainer • Self-presentation of cotrainer	• Creating a good working atmosphere • Presenting the module idea • Presenting the competences of trainers	• Slide Presentation	• Power Point Slides • Flip charts & post-its	• Trainer • Cotrainer
	15 min	• Agenda of the course • Short presentation of the course content (objectives and learning outcomes) • Time schedule of the course • Self-presentation of participants	• Sharing with scope of the course • Presenting possible benefits from participation in the course • Participants get to know each other	• Slide Presentation	• Power Point Slides	• Trainer • All participants
Working phase 1	45 min	**Revision of project management (PM) knowledge**	• Focusing participants on crucial PM areas • Describing project conditions	• Slide Presentation • Case studies	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

		• Outlook of knowledge related to research project and program • Project Life Cycle, Project processes, project success criteria and factors • Critical of traditional PM standards – PMBoK, PRINCE2, APM, ISO 21500 ect. • Fuzzy and dynamically changing project environment		• Discussion and exchange of experiences		
Working phase 2	90 min	**Agile fundamentals** • Agile manifesto • From project changes to project agile approach • Adaptive vs incremental approach • Hybrid approach • Why researchers should be agile? What could be done agile in research project?	• Knowing approaches related to organisation agility • Knowing fundamental knowledge related to agile approach • Understanding the utilisation of various approaches (agile, traditional, mix) in project management	• Slide Presentation • Expert lectures • Case studies • Discussion and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
	90 min	**Scrum fundamentals** • Agile methodologies • Scrum team • Scram events • Scram artifacts • How to apply scrum in research project?	• Knowing modern approaches to project management in dynamically changing environments • Preparing to be familiar with agile framework etc. • Knowing roles and responsibilities in agile project management teams and how to	• Slide Presentation • Case studies • Presentations • Discussion and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

			enable cooperation and commitment			
Closing day 1	15 min	• Summary of the presented topics – part 1 • Discussion related to the agile approach in research project	• Reflecting upon the disused topic and issues • Summarizing the crucial PM knowledge relevant to discussed topics	• Reflection and discussion	• Power Point Slides	• Trainer • CoTrainer • All participants

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Working phase 3	15 min	• Repetition from the previous day	• Introducing to the next PM topics •	• Discussion	• None	• Trainer • All participants
	45 min	**Kanban and Lean** • Kanban in production engineering • Kanban framework and table • ICT tools supporting Kanban e.g. Trello • Lean	• Knowing modern approaches to project management in dynamically changing environments • Preparing to be familiar with agile framework etc. • Knowing roles and responsibilities in agile project management teams and how to enable cooperation and commitment	• Slide Presentation • Case studies • Presentations • Discussion and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
	120 min	**Scrum application – Lego Scrum workshop** • Sprint 1	• Preparing to be familiar with agile work • Knowing roles and responsibilities in agile	• Slide Presentation • Individual and group work	• Power Point Slides • Flip charts & post-its • Lego bricks	• Trainer • All participants

		• Sprint 2 • Sprint 3 • Discussion about final workshop results	project management teams and how to enable cooperation and commitment	• Discussion and exchange of experiences		
Working phase 4	60 min	**Hybrid approach in research project** • What should be waterfall? • What should be agile? • What is extreme? • How to apply agile in my research project?	• Knowing modern approaches to project management in dynamically changing environments • Preparing to be familiar with agile framework and various techniques	• Slide Presentation • Case studies • Presentations • Discussion and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
	75 min	**Design thinking and agile** • Fundamentals of design thinking • How to combine both concepts in research project • How to apply design thinking in my research project?	• Knowing how to combine agile with design thinking • Preparing to be familiar with thinking in innovative, agile manner • Preparing to utilise design thinking in research work	• Slide Presentation • Case studies • Presentations • Discussion and exchange of experiences	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Closing the course	15 min	• Q&A about the presented topics and feedbacks collections	• Clarifying contents and collect information for mindSET project improvements	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Post-course phase

Project work to be completed until 2 weeks after the course. To be uploaded on learning platform.

Module IV: Cooperation, Communication and Presentation

1 Nr. | Module

IV – Cooperation, Communication and Presentation

2 Nr. | Course Title

IV – 1: Teams, Alliances and Networks

3 Course Format

The course will be taught with a blended learning approach, optionally as a classroom teaching or online course.

4 Key Data

Scope (class hours): 15 working units - 45 min. per unit
ECTS: 1 (recommended)

5 Learning Outcomes

- Capability of identifying opportunities for diverse coalitions
- Ability to identify competences and find appropriate partners
- Knowledge of success factors for effective teamwork (face to face and virtual) and how to solve problems constructively
- Knowledge of the characteristics of strategic alliances
- Familiarity with approved techniques of networking in order to make suitable contacts, to communicate goal-oriented messages and to find the balance between giving and receiving
- Knowledge of different types of networks and how to maintain them

6 Overall Contents

- Fundamentals of collaboration (goals, motives, opportunities, benefits and challenges)
- Working in teams (face to face and virtual, development phases, potential solutions and conflicts)
- Strategic alliances (objectives, types, benefits vs. challenges)
- Success factors of strategic alliances
- Basics of networking (development and selection of contacts, benefits vs. efforts)
- Network mechanisms, management and control
- Maintaining the network: Dos and Don’ts of networking
- Characteristics of virtual networks

7 Overview of Teaching Methods

- Input
- Workshop character
- Practical examples
- Group exercises
- Reflection and discussion
- Online assignments

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience

- PhD students with little or no previous knowledge.
- Participants with previous experience aiming to broaden their knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions eg. webinars. It is very important to give students an example of usage of the presented tool and techniques, but also to give them the opportunity to test their understanding in a project work.

10 Course materials / reading list

The slides and case studies will be distributed no later than by the beginning of the course.

Recommended literature:

- Robbins Stephen P., Judge Timothy A (2015), Organizational Behavior, Pearsons, New Jersey
- Gao, S., Guo, Y., Chen, J. *et al.* (2016)Factors affecting the performance of knowledge collaboration in virtual team based on capital appreciation. *Inf Technol Manag* 17, 119–131. https://doi.org/10.1007/s10799-015-0248-y
- Marques, L., Ribeiro, J. A., & Scapens, R. W. (2011). The use of management control mechanisms by public organizations with a network coordination role: A case study in the port industry. *Management Accounting Research*, *22*(4), 269-291. https://doi.org/(...)16/j.mar.2011.09.001
- Park, S. H. (1996). Managing an interorganizational network: a framework of the institutional mechanism for network control. *Organization studies*, *17*(5), 795-824
- Daniela Cristofoli, Benedetta Trivellato & Stefano Verzillo (2019) Network management as a contingent activity. A configurational analysis of managerial behaviors in different network settings, Public Management Review, 21:12, 1775-1800, DOI: 10.1080/14719037.2019.1577905
- Russo, M., & Cesarani, M. (2017). Strategic alliance success factors: A literature review on alliance lifecycle, International Journal of Business Administration, 8(3), doi:10.5430/ijba.v8n3p1
- Arun Rai, Santanu Borah, Arkalgud Ramaprasad (1996), Critical Success Factors for Strategic Alliances in the Information Technology Industry: An Empirical Study, Decision Sciences, 27(1), https://doi.org/10.1111/j.1540-5915.1996.tb00848.x
- Todeva E., Knoke D.(2005), Strategic Alliances and Models of Collaboration. Management Decision, Vol. 43, Nr 1, s. 123-148**.**

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Day 1

Course Phase	Time| Duration (min.)	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	10 min	• Welcome • Introduction to the module • Self-presentation of trainer • Self-presentation of CoTrainer	• Creating a good working atmosphere • Presenting the module idea • Presenting the competences of trainers	• Slide Presentation	• Power Point Slides	• Trainer • CoTrainer
	35 min	• Agenda of the course • Short presentation of the course content (objectives and learning outcomes) • Time schedule of the course • Self-presentation of participants	• Sharing with scope of the course • Presenting possible benefits from participation in the course • Participants get to know each other	• Slide Presentation	• Power Point Slides	• Trainer • All participants
Working phase 1	90 min	**Fundamentals of collaboration (goals, motives, opportunities, benefits and challenges):**	• Introducing the basic knowledge related to collaboration	• Slide Presentation • Moderated group discussion • Case studies	• Power Point Slides	• Trainer • All participants

		• Why do workplace failures happen? • What do you do before setting up a collaboration? • Is collaboration a skill? • How to improve team collaboration skills? • Invividual attributes (collaborative intentions, collaborative capacity) • Teams attrubutes (collaborative atmosphere, collaborative culture, motivator)	• Gaining a basic understanding of goals, motives, opportunities, benefits and challenges of collaboration	• Reflection and discussion		
Working phase 2	90 min	**Working in teams (face to face and virtual, development phases, potential solutions and conflicts)** • Why have teams become so popular? • Differences between groups ant teams • Types of teams (problems-solving teams, self-managed work teams, cross functional teams, virtual teams, creating effective teams) • Turning individuals into Teams Player • Beware! Teams aren't always the answer	• Demonstrating that understanding teams may support creating effective work place • Gaining a basic understanding of working in teams • Sharing terminology and basic concepts	• Slide Presentation • Moderated group discussion • Expert input • Case studies • Reflection and discussion • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

Closing half of the day 2	15 min	• Summary of the presented topics – part 1 • Discussion related to the application of collaboration and teams working knowledge	• Reflecting upon the disused topic and issues • Summarizing the crucial teamwork and collaboration issues	• Reflection and discussion	• Power Point Slides	• Trainer • CoTrainer • All participants

Lunch break

Working phase 3	60 min	**Strategic alliances (objectives, types, benefits vs. challenges)** • Types of Strategic Alliances • Key components to successful alliances • Advantages and Disadvantages of Strategic Alliances	• Demonstrating that strategic alliances can support an organisation • Gaining a basic understanding of strategic alliances	• Slide Presentation • Moderated group discussion • Case studies • Reflection and discussion	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Working phase 4	45 min	**Success factors of strategic alliances** • Strategic alliance success factors • Strategic alliance success factors on alliance lifecycle Future Success of An Organization Counts On The Value Strategic Alliances & Ecosystem	• Knowing what is important to the success of strategic alliance • Knowing how to monitor and control strategic alliance	• Slide Presentation • Moderated group discussion • Case studies • Individual exercises and group work • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Working phase 5	45 min	**Basics of networking (development and selection of contacts, benefits vs. efforts)** • Networking Definition • Forms of Networking	• Being able to understand what networking is and how it works	• Slide Presentation • Moderated group discussion • Case studies	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

		• The Benefits of Business Networking • Make the Most of Your Business Networking • Business Networking Groups	• Being able to understand how can networking help with career advancement	• Individual exercises and group work • Exchange of experience		
Closing day 1	15 min	• Summary of the presented topics – part 3 • Discussion related to the networking	• Reflecting upon the disused topic and issues • Summarizing the crucial networking knowledge	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
	15 min	• Repetition from the previous day	• Introducing to the next network topics	• Discussion	• None	• Trainer • All participants
Working phase 6	75 min	**Network mechanisms, management and control** • Network mechanisms • Models of network governance • Network management as a contingent activity • Management control mechanisms (MCM) (outcome, behavioural, social)	• Being able to identify network mechanism • Knowing models of network governance • Understanding the role of network management • Understanding management control mechanisms	• Slide Presentation • Moderated group discussion • Case studies • Individual exercises and group work • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

Working phase 7	75 min	**Maintaining the network: Do‘s and Don’ts of networking** • Networking do‘s and don’ts • Do‘s and Don’ts of networking on Social Media • Do‘s and Don’ts of professional networking • Networking - the do's and don'ts and how to make sure that you get out what you put in	• Being able to maintain the network • Knowing do’s and don’ts of networking	• Slide Presentation • Moderated group discussion • Case studies • Individual exercises and group work • Exchange of experience	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants
Closing half of the day 2	15 min	• Summary of the presented topics – part 2 • Discussion related to the maintaining the network	• Reflecting upon the disused topic and issues • Summarizing the crucial networking knowledge	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Lunch break

Working phase 8	75 min	**Characteristics of virtual networks** • Network characteristics (Network density, connection strength (time, emotional intensity, intimacy and reciprocal)) • Individual attributes (collaborative intentions, collaborative capacity) • Team attributes (collaborative atmosphere,	• Being able to understand network characteristics • Knowing how individual attributes influence networking • Knowing how team attributes influence networking	• Slide Presentation • Moderated group discussion • Case studies • Individual exercises and group work • Online content and assignments (application of software) • Exchange of experience	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants

		collaborative culture, motivator)				
Closing day 2	15 min	• Q&A about the presented topics and feedbacks collections	• Clarifying contents and collect information for mindSET project improvements	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Post-course phase

Project work to be completed until 2 weeks after the course. To be uploaded on learning platform.

1 Nr. | Module

IV – Cooperation, Communication and Presentation

2 Nr. | Course Title

IV – 2: Communication and Presentation

3 Course Format

The course will be taught with a blended learning approach, optionally as a classroom teaching or online course.

4 Key Data

Scope (class hours): 15 working units- 45 min. per unit
ECTS: 1 (recommended)

5 Learning Outcomes

- Knowledge of the fundamentals of effective communication
- Knowledge of the major communication theories and models
- Knowledge of the principles of how to plan, design and deliver a convincing presentation
- Capability of preparing and conducting a convincing presentation
- Knowledge of different types of media and how to use them appropriately to support convincing presentations

6 Overall Contents

- Basic principles of communication
- Major communication theories and communication models
- Effective methods of communicating to an audience (set objectives, target group, number of participants, etc.)
- The role of visualisation and media
- Different types of media (possible applications, advantages/disadvantages)
- Designing a presentation
- Best practices for presenters: basic guidelines (gestures, mimic expression, body language, etc.)
- Presentation guidelines in the professional context

7 Overview of Teaching Methods

- Input
- Individual and group exercises
- Preparation of short presentations with different types of media
- Reflection on participants' presentation styles and (video) feedback
- Exchange of experiences (good practice)

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience

- PhD students with little or no previous knowledge.
- Participants with previous experience aiming to broaden their knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions e.g. webinars. It is very important to give students and example of usage of presented tool and techniques, but also to give them the opportunity to test their understanding in a project work.

10 Course materials / reading list

The slides and case studies will be distributed no later than by the beginning of the course.

Recommended literature:

- Robbins Stephen P., Judge Timothy A (2015), Organizational Behavior, Pearsons, New Jersey
- Patel F., Li M., Sooknanan P. (2011) Intercultural communication: Building a global community, Sage Publications
- Trenholm S. (2017), Thinking Through Communication: An Introduction to the Study of Human Communication, Routledge
- Dudo A, Kahlor L., (2016) Strategic Communication: New Agendas in Communication, Routledge
- Gutierez A. (2014), Effective Communication in the Workplace: Learn How to Communicate Effectively and Avoid Common Barriers to Effective Communication, CreateSpace Independent Publishing Platform

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Day 1

Course Phase	Time| Duration (min.)	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	10 min	• Welcome • Introduction to the module • Self-presentation of trainer • Self-presentation of CoTrainer	• Creating a good working atmosphere • Presenting the module idea • Presenting the competences of trainers	• Slide Presentation	• Power Point Slides	• Trainer • CoTrainer
	35 min	• Agenda of the course • Short presentation of the course content (objectives and learning outcomes) • Time schedule of the course • Self-presentation of participants	• Sharing with scope of the course • Presenting possible benefits from participation in the course • Participants get to know each other	• Slide Presentation	• Power Point Slides	• Trainer • All participants
Working phase 1	60 min	**Basic principles of communication:**	• Introducing the basic knowledge related to communication	• Slide Presentation • Moderated group discussion • Case studies	• Power Point Slides	• Trainer • All participants

		• Definitions and Perspectives of Communication • The Communication Process • Decoding Messages: Listening and Perception • Encoding Messages: Spoken Language • Encoding Messages: Nonverbal Communication • Direction of Communication • Interpersonal Communication	• Gaining a basic understanding of interpersonal communication	• Reflection and discussion		
	60 min	**Major communication theories and communication models:** • Models of Communication • Formal Small Group Networks (chain, wheel, all channel) • The Grapevine • Group Communication • Organizational Communication • Public Communication • Communicationg to Mass Audiences • Intercultural Communication	• Introducing the basic knowledge related to models of communication • Gaining a basic understanding of group, organizational, public and mass audience communication • Gaining a basic understanding of intercultural communication	• Slide Presentation • Moderated group discussion • Case studies • Reflection and discussion • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

Working phase 2	60 min	**Effective methods of communicating to an audience (set objectives, target group, number of participants, etc.):** • Choice of communication channel • Barriers to effective communication (filtering, selective perception, information overload, emotions, language, communication apprehension, gender differences, politically correct communication • Global implications (cultural barriers, cultural context) • Communication in geographically distributed teams	• Introducing the basic knowledge related effective methods of communication • Gaining a basic understanding of communication channels • Gaining a basic understanding of effective communications barriers • Gaining a basic understanding of communication in geographically distributed teams	• Slide Presentation • Moderated group discussion • Case studies • Reflection and discussion	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Closing half of the day 2	15 min	• Summary of the presented topics – part 1 • Discussion related to the application of communication knowledge for researchers needs	• Reflecting upon the disused topic and issues • Summarizing the crucial communication knowledge relevant to discussed topics	• Reflection and discussion	• Power Point Slides	• Trainer • CoTrainer • All participants

Lunch break

Working phase3	45 min	**Designing a presentation** • Narrative layer • Value layer • Workshop layer	• Being able to understand presentation layers and their meaning	• Slide Presentation • Moderated group discussion • Case studies	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants

		• Visualization layer		• Individual exercises and group work • Online content and assignments (application of software) • Exchange of experience		
	45 min	**The role of visualisation and media:** What makes a good visualization (data, concept, function, metaphor)?	• Being able to understand the role of visualization	• Slide Presentation • Moderated group discussion • Individual exercises and group work • Exchange of experience	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants
Working phase 4	45 min	**Best practices for presenters: basic guidelines (gestures, mimic expression, body language, etc.)** • What is the thesis of the presentation? • What should the audience remember? • What should they learn? • How should they feel? • Body language • Contact with the audience	• Being able to apply best practices for presenters • Knowing how to lead good presentation • Being able to understand the manning of body language • Being able to understand the manning of contact with audience	• Slide Presentation • Moderated group discussion • Case studies • Individual exercises and group work • Exchange of experience	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants
Working phase 5	30 min	**Presentation guidelines in the professional context** • slide types • starting point • slide order	• Being able to design professional presentation	• Slide Presentation • Moderated group discussion • Case studies • Individual exercises and group work	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants

		• the amount of text on the slide • colors, fonts, graphics, photos etc.,		• Online content and assignments (application of software) • Exchange of experience		
Closing day 1	15 min	• Summary of the presented topics – part 3 • Discussion related to the project monitoring and control	• Reflecting upon the disused topic and issues • Summarizing the crucial PM knowledge relevant to discussed topics	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Working phase 6	15 min	• Repetition from the previous day	• Introducing to the next topics	• Discussion	• None	• Trainer • All participants
	165 min	**Designing a presentation - workshop** • Individual presentations • Groupe feedback	• Being able to apply to prepare and present good presentation	• Slide Presentation • Moderated group discussion • Exchange of experience	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants

Closing half of the day 2	15 min	• Summary of the presented topics – part 2 • Discussion related to the presentation designing	• Reflecting upon the disused topic and issues • Summarizing the crucial presentation knowledge	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Lunch break

Working phase 6	45 min	**Different types of media (possible applications, advantages/disadvantages)** • Physical media and Mechanical media • Push or Pull channels • Choosing the right channel for the communication	• Being able to apply different types of media and understand their (dis) advantages	• Slide Presentation • Moderated group discussion • Case studies • Individual exercises and group work • Exchange of experience	• Power Point Slides • Excel template • Flip charts & post-its	• Trainer • All participants
Closing day 2	15 min	• Q&A about the presented topics and feedbacks collections	• Clarifying contents and collect information for mindSET project improvements	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Post-course phase

Project work to be completed until 2 weeks after the course. To be uploaded on learning platform.

1 Nr. | Module

IV – Cooperation, Communication and Presentation

2 Nr. | Course Title

IV – 3: Group Dynamics and Conflict Management

3 Course Format

The course will be taught with a blended learning approach, optional as a classroom teaching or online course.

4 Key Data

Scope (class hours): 15 working units á 45 min.
ECTS: 1 (recommended)

5 Learning Outcomes

- Be able to identify and analyse factors driving group dynamics
- Increase understanding of the importance of roles, norms and structure in groups
- Be able to identify sources of conflicts
- Know how to solve conflicts constructively

6 Overall Contents

- Key theories of group dynamics
- Characteristics of groups and group phenomena
- In-group dynamics: formation, joining, cohesion, structure, group types, group and types of tasks
- Social influence in the group: roles, norms, status; group impact on individuals
- Group performance and process losses
- Group decisions and inter-group dynamics
- Group and leadership
- Basis and origins of conflicts
- Conflict models and types of conflicts (personal/ organisational/ inter-group conflicts)
- Conflict resolution, escalation and mediation

7 Overview of Teaching Methods

- Practitioner input
- Workshop character
- Case studies
- Group exercises (role play, etc.)
- Working on participants' examples
- (Video) feedback
- Reflection and discussion
- Exchange of experience

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience

- PhD students with little or no previous knowledge
- Participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions by webinars. It is very important to give students and example of usage of presented tool and techniques, but also to give them the opportunity to test their understanding in a project work.

10 Course materials / reading list

The slides and case studies will be distributed at least at the beginning of the course.

Recommended literature:

- Coleman, P. T., Deutch, M., Marcus, E. C. (2014). The Handbook of Conflict Resolution: Theory and Practice. Wiley.
- Fabritius, F., Hagemann, H. W. (2017). Leading Brain. Powerful Science-Based Strategies for Achieving Peak Performance. TarcherPerigee.
- Franz, T. M. (2012). Group Dynamics and Team Interventions: Understanding and Improving Team Performance. Wiley.
- Thompson, L. L. (2016). Making the Team. Pearson.

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Day 1

Course Phase	Time| Duration (min.)	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	10 min	• Welcome • Introduction to the module • Self-presentation of trainer • Self-presentation of cotrainer	• Creating a good working atmosphere • Presenting the module idea • Presenting the competences of trainers	• Slide Presentation	• Power Point Slides	• Trainer • CoTrainer
	35 min	• Agenda of the course • Short presentation of the course content (objectives and learning outcomes) • Time schedule of the course • Self-presentation of participants	• Sharing with scope of the course • Presenting possible benefits from participation in the course • Participants get to know each other	• Slide Presentation • Discussion • Workshop character – work organization of the course	• Power Point Slides	• Trainer • All participants

Working phase 1	45 min	**Fundamentals of Group Dynamics** • Basic assumptions and key theoretical concepts of the Group Dynamics • Group process: conceptual scope, phenomena • Conflicting vectors in the group process: integration and differentiation; aspects of opposition: emotional, cognitive, social	• Be familiar with group dynamics and group process • Understand the key problem related to the lack of awareness of the group process for the effects of team work • Be able to see the complexity of phenomena and dynamics in a group process	• Slide Presentation • Case study • Practitioner input • Reflection and discussion • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Working phase 2	90 min	**Potential (often undiscovered) of the group process** • Types of groups, group versus team, group functions • Types of tasks, chances for synergy effect • The benefits of a group process: small group, intergroup and organization • Research and project teams as special cases of a small group **Group Features and Impact to Group Process** • Group size and structure • Group communication • Group norms and culture • Group cohesion, Group roles and status, impact of diversity	• Understand the key concepts of group dynamics and the possibilities of their use in research and project teams • Increase understanding of the importance of roles, norms and structure in groups • Be able to identify and analyse factors driving group dynamics	• Practitioner input • Slide Presentation • Case study • Group exercises • Feedback • Reflection and discussion • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

Working phase 3	90 min	**Group Development Phases: Phenomena, Behaviors, Efficiency** • Formation and joining: group as a system, individual in a group • Group roles, sense perception, group status, group impact on the individual • Group development: turbulence, normalization; the role of conflicts in the development process and team performance • The decline and end of the group's existence • Good group history as a contribution to future teams and formation of a high-performing teams	• Understand the key concepts of group development and the possibilities of their use in research and project teams • Be able to identify and analyse factors of group development • Be able to analyse problems and take action in a wider and sustainable context to increase the use of the group process development	• Practitioner input • Slide Presentation • Case study • Group exercises • Feedback • Reflection and discussion • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Working phase 4	90 min	**Groups and Leadership** • The role of leader in a group process • Impact of leadership style on the group; participation issue. • Challenges for leaders: how to increase the creativity and innovation of group achievements • Positive and negative phenomena in the group, impact on individuals and	• Understand the key concepts of leadership and the possibilities of their use in research and project teams • Increase understanding of the importance of roles, norms and structure in groups • Be able to take on leader role in the group • Be able to cooperate with interdisciplinary	• Practitioner input • Slide Presentation • Case study • Group exercises • Feedback • Reflection and discussion • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

		group work (problem solving and decision making) • Conformism, influence of minorities on the majority, social idleness • Group thinking and polarization • Creating conditions supporting the work of teams: *flow* theory and its practical application	and transdisciplinary groups			

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Working phase 5	90 min	**Conflict Management** • Definition of conflict, models of conflict; sources of conflicts; internal and external conflicts • Constructive approach to conflict: conditions of cooperation, conditions of competition, emotions in conflict • Conflicts: functional, dysfunctional; personal, organizational, inter-group conflicts • Roles of group leaders in the conflict process	• Be able to identify sources of conflicts • Know to solve conflicts constructively • Be able to take on different roles in the group in the conflict situations	• Practitioner input • Slide Presentation • Case study • Group exercises • Feedback • Reflection and discussion • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer/CoTrainer • All participants

Working phase 6	135 min	**Conflict Resolution and Leaders Skills** • Negotiation strategies: choice, context, results • Mediation of conflict; context, cognition, actions • Constructive communication • Problem solving and decision making in conflict resolution • Conflict and change processes: constructive treatment of resistance to change, supporting learning and commitment	• Be able to identify sources of conflicts • Know to solve conflicts constructively • Be able to take on different roles in the group in the conflict situations	• Practitioner input • Slide Presentation • Case study • Group exercises • Feedback • Reflection and discussion • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer/CoTrainer • All participants
Working phase 7	70 min	**Remote Leadership and Conflict Management** • Dynamics of small groups working remotely: impact of distance on group process: phenomena, disruptions, benefits • Tasks for remote leadership: building relationships, motivation, solving conflict, controlling multitasking, building engagement • Team building across distance and culture (thanks to diversity): problems and opportunities for the team and organization	• Understand the key concepts of leadership and the possibilities of their use in research and project teams • Be able to take on different roles in the group • Be able to cooperate with interdisciplinary and transdisciplinary groups and virtual teams	• Practitioner input • Slide Presentation • Case study • Group exercises • Feedback • Reflection and discussion • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer/CoTrainer • All participants

	20 min	• Q&A about the presented topics and feedbacks collections	• Clarifying contents and collect information for mindSET project improvements	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Post-course phase

Project work to be completed until 2 weeks after the course. To be uploaded on learning platform.

1 Nr. | Module

IV – Cooperation, Communication and Presentation

2 Nr. | Course Title

IV – 4: Interdisciplinary and Transdisciplinary Research

3 Course Format

The course will be taught with a blended learning approach, optional as a classroom teaching or online course.

4 Key Data

Scope (class hours): 15 working units á 45 min.
ECTS: 1 (recommended)

5 Learning Outcomes

- Understand key concepts of inter- and transdisciplinary research
- Understand particularities of research management in inter- and transdisciplinary research and know how to apply them
- Be able to place research in a wider and sustainable context

6 Overall Contents

- Clarifying terminology: intra-, cross-, multi-, inter- and transdisciplinary
- Value added, challenges, prerequisites and support factors of inter- and trans-disciplinary research
- Building cooperation: initiation of inter- and transdisciplinary research
- Managing inter- and transdisciplinary research: tasks and challenges
- Planning and finding join research interests/topics
- Joint research projects: working and communicating in heterogeneous, inter- and transdisciplinary teams
- Success criteria for joint, inter- and transdisciplinary research projects
- Realising the innovative potential of inter- and transdisciplinary research teams
- Good practices of inter- and transdisciplinary research
- Maintaining research sustainability

7 Overview of Teaching Methods

- Practitioner input
- Case studies
- Group discussion
- Reflection
- Exchange of experience

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience

- PhD students after the course Project Management Fundamentals
- Participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions by webinars. It is very important to give students and example of usage of presented tool and techniques, but also to give them the opportunity to test their understanding in a project work.

10 Course materials / reading list

The slides and case studies will be distributed at least at the beginning of the course.

Recommended literature:

- Leavy, P. (2016). Essentials of transdisciplinary research: Using problem-centered methodologies. Routledge.
- Wickson, F., Carew, A. L., & Russell, A. W. (2006). Transdisciplinary research: characteristics, quandaries and quality. Futures, 38(9), 1046-1059.
- Repko, A. F., & Szostak, R. (2020). Interdisciplinary research: Process and theory. SAGE Publications, Incorporated.
  Dale, A., Newman, L., & Ling, C. (2010). Facilitating transdisciplinary sustainable development research teams through online collaboration. International Journal of Sustainability in Higher Education, 11(1), 36 - 48

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course strategy
- Preparing course content & materials
- Distributing course content & materials
- Governing course organisation (registration of participants, room booking, catering etc.)

Day 1

Course Phase	Time| Duration (min.)	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory	10 min	• Welcome • Introduction to the module • Self-presentation of trainer • Self-presentation of cotrainer	• Creating a good working atmosphere • Presenting the module idea • Presenting the competences of trainers	• Slide Presentation	• Power Point Slides	• Trainer • CoTrainer
	35 min	• Agenda of the course • Short presentation of the course content (objectives and learning outcomes) • Time schedule of the course • Self-presentation of participants	• Sharing with scope of the course • Presenting possible benefits from participation in the course • Participants get to know each other	• Slide Presentation	• Power Point Slides	• Trainer • All participants
Working 1	45 min	**Revision of knowledge related to cooperation in research group** • Targets, strengths and weaknesses of the join work in research projects	• Be familiar with collaboration methods, techniques • Understand key issue related to collaboration	• Slide Presentation • Practitioner input • Case studies • Group discussion • Reflection	• Power Point Slides	• Trainer • All participants

		• Collaboration in various projects – different targets, culture context, language differences etc. • Change Management and dynamic environment		• Exchange of experience		
Working 2	90 min	**Fundamentals of Interdisciplinary research** • Research environment: society needs, development of standard of living, sustainable growth etc. • The role of academic study in civilization changes and breakthroughs • Interdisciplinary research – definition, classification of academic disciplines etc. • Problems related to interdisciplinary research (communication, understanding, common language etc.) • Opportunities related to interdisciplinary research (new signs, breaking down barriers, added value etc.) • IT tools supporting data collection and	• Understand key concepts of interdisciplinary research • Understand particularities of research management in interdisciplinary research and know how to apply them • Be able to place research in a wider and sustainable context	• Slide Presentation • Case studies • Group discussion • Reflection • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Working 3	90 min	**Fundamentals of Transdisciplinary research** • Resource theory, resource limitations	• Understand key concepts of transdisciplinary research	• Slide Presentation • Case studies • Group discussion • Reflection	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

		• Theory of international trade (economic collaboration) and transdisciplinary research (academia and corporation collaboration) • Benefits related to transdisciplinary collaboration • Challenges related to transdisciplinary collaboration • Public programs supporting transdisciplinary collaboration • IT tools supporting virtual communication	• Understand particularities of research management in transdisciplinary research and know how to apply them • Be able to place research in a wider and sustainable context	• Exchange of experience		
Working 4	90 min	**Crucial issues related to design of Interdisciplinary and Transdisciplinary collaboration** • How to define the interdisciplinary research field? • How to create (recruit) the team and find the institutional partners? • How to assign the responsibilities of institutional partners and members? • How to schedule the project? • How to create the budget?	• Understand particularities of design of research in inter- and transdisciplinary research and know how to apply them • Be able to place research in a wider and sustainable context	• Slide Presentation • Practitioner input • Case studies • Group discussion • Reflection • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer • All participants

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
	60 min	**Crucial issues related to management of Interdisciplinary and Transdisciplinary collaboration** • How to manage the team? • How to participate in a team work? • How to combine various subproducts and receive the final product? • How to measure the research project performance ? • How to govern the research projects?	• Understand particularities of research management in inter- and transdisciplinary research and know how to apply them • Be able to place research in a wider and sustainable context	• Slide Presentation • Practitioner input • Case studies • Group discussion • Reflection • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
Working 5	135 min	**Workshop A related to interdisciplinary and transdisciplinary research** • Searching of common research fields • Combining of different fields for complex study • Writing the abstract of join projects • Discussion of potential new fields of study	• Be able to define research in a wider and sustainable context • Be able to collaborate in interdisciplinary and transdisciplinary group	• Group discussion • Reflection • Exchange of experience	• Flip charts & post-its	• All participants

Working 6	90 min	**Founding and Supporting interdisciplinary and transdisciplinary studies** • The European research area: priorities for interdisciplinary research • EU science hub • IT platform and software supporting interdisciplinary research and transdisciplinary research	• Be familiar with financing opportunities related to the studies • Be able to support research	• Slide Presentation • Practitioner input • Case studies • Group discussion • Reflection • Exchange of experience	• Power Point Slides • Flip charts & post-its	• Trainer • All participants
	20 min	• Q&A about the presented topics and feedbacks collections	• Clarifying contents and collect information for mindSET project improvements	• Reflection and discussion	• None	• Trainer • CoTrainer • All participants

Post-course phase

Project work to be completed until 2 weeks after the course. To be uploaded on learning platform.

Module V – Leadership and Management

1 Nr. | Module

V – Leadership and management

2 Nr. | Course Title

V – 1: Fundamentals of management: planning, organising, directing and controlling

3 Course Format

The course will be taught with a blended learning approach, with some modules online.

4 Key Data

Scope (class hours): 16 working units á 45 min. each (12 hours)
ECTS: 2,5 (recommended)

5 Learning Outcomes)

- Gain understanding of different management processes and how to apply them successfully to different professional contexts
- Know specifics of project-based operations
- Know how to apply the tools and techniques for planning, organising, directing and controlling projects along the project life-cycle
- Know all aspects of project organisation along the project life cycle

6 Overall Contents

- What is management? Definition, objectives, characteristics, processes
  - Portfolio, program, project and operation management
  - Management vs leadership
- Initiating a project: charter, stakeholder and vision creation
- Fundamentals of planning
  - Work breakdown structure
  - Estimating
  - Project baseline creation
- Risk management
- Monitoring and controlling (e.g. tasks and objectives): Earned Value
- Project executing (stakeholder engagement, quality assurance and develop and manage team)
- Application of tools and techniques for planning, organising, directing and controlling projects

7 Overview of Teaching Methods

- Short Inputs
- Group discussion
- Practical case: examples (e.g. case studies/good practice)
- Testimonials from the industrial sector
- Exchange of experience
- Project work

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience

- PhD students with little or no previous knowledge.
- Participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions by webinars. It is very important to give students and example of usage of presented tool and techniques, but also to give them the opportunity to test their understanding in a project work.

10 Course materials / reading list

The commented slides will be distributed
Templates of project management tools are distributed and discussed, including WBS templates, project charter, product vision, …

Course Outline for Trainers

Pre-course Phase |Preparation List

Send materials to participants two weeks in advance

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory Phase	15 min	• Welcome, Agenda • Self-presentation of participants • Pains and gains • Most important question	• Creating a good working atmosphere • Participants get to know each other	• Presentation	• Flip charts & post-its	• Trainer • All participants
Working Phase	30 min	• Introduction to management • Project, program, portfolio and operation management	• Sharing terminology and basic concepts	• Presentation • Discussion	• PPT Presentation	• Trainer • All participants
	45 min	• Project initiating • Project charter	• Sharing terminology and basic concepts	• Presentation •	Flip charts & post-its	• Trainer •
	45 min	• Project charter examples	• Explainig how to create and evaluate a project charter	• Work in groups • Discussion	• Flip charts & post-its • PPT Presentation	• Trainer • All participants
	45 min	• Stakeholder register • Stakeholder analysis • Engagement assessment matrix • Management strategy	• Sharing correct terminology • Sharing tools	• Presentation	• PPT Presentation	• Trainer

	45 min	• Stakeholder management examples	• Explainig how to create and evaluate a stakeholder register and a stakeholder management strategy	• Work in groups • Discussion	• Flip charts & post-its	• Trainer • All participants
	45 min	• Scope definition • Requirements definition • Collect requirement process • Product vision	• Sharing correct terminology • Sharing tools	• Presentation	• PPT Presentation	• Trainer
	45 min	• Product vision examples	• Explainig how to create a product vision • Explainig the difference between need, requirement and implentation.	• Work in groups • Discussion	• Flip charts & post-its	• Trainer • All participants
	45 min	• Requirement tracability matrix • Requirements tracability matrix examples • The concept of value	• Sharing correct terminology • Sharing tools	• Presentation • Work in groups • Discussion	• PPT Presentation • Flip charts & post-its	• Trainer • All participants
Closing Phase	15 min	• Q&A about the presented topics and feedbacks collections	• Clarifing contents and collect information for improvements	• Discussion	• None	• Trainer All participants

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductor	30 min	• Review of contents of the previous day	• Reinforcing main contents delivered	• Presentation	• PPT Presentation • Flipchart	• Trainer • All participants

Working Phase	45 min	• Phases and components of a project plan	• Giving an overview of project planning	• Presentation	• PPT Presentation • Flipchart	• Trainer • All participants
	45 min	• The Work Breakdown structure	• Explainig how to decompose a project work	• Presentation • Group Work	• PPT Presentation • Flipchart	• Trainer • All participants
	45 min	• The Project Schedule	• Explainig how to schedule activities	• Presentation • Group Work	• PPT Presentation • Flipchart	• Trainer • All participants
	45 min	• The Project Budget	• Explainig how to define a project budget	• Presentation • Group Work	• PPT Presentation • Flipchart	• Trainer • All participants
	45 min	• The Operation Plan	• Giving an overview of operation planning	• Presentation	• PPT Presentation • Flipchart	• Trainer • All participants
	45 min	• The integration of project plans at program level	• Explainig how to build a program plan	• Presentation	• PPT Presentation • Flipchart	• Trainer • All participants
	45 min	• The management of resources at project program and portfolio level	• Explainig how to manage reources split in programs and projects	• Presentation	• PPT Presentation • Flipchart	• Trainer • All participants
Closing Phase	15 min	• Q&A about the presented topics and feedbacks collections	• Clarifing contents and collecting information for improvements	• Discussion	• None	• Trainer • All participants

Day 3

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory Phase	30 min	• Review of contents of the previous day	• Reinforcing main contents delivered	• Presentation	• PPT Presentation • Flipchart	• Trainer • All participants

Working Phase	45 min	• The monitoring and control of a project and a program	• Explaining how to monitor the progress of a project and a program	• Presentation	• PPT Presentation • Flipchart	• Trainer • All participants
	45 min	• The monitoring and control of a portfolio	• Explaining how to monitor a portfolio of projects and programs	• Presentation • Group Work	• PPT Presentation • Flipchart	• Trainer • All participants
	45 min	• The project risk management	• Giving an overview of the main activities and tools of the project risk management	• Presentation • Group Work	• PPT Presentation • Flipchart	• Trainer • All participants
	45 min	• The stakeholder management	• Giving an overview of the main activities and tools of the stakeholder management	• Presentation • Group Work	• PPT Presentation • Flipchart	• Trainer • All participants
	45 min	• The team management	• Giving an overview of the main activities and tools of the team management	• Presentation	• PPT Presentation • Flipchart	• Trainer • All participants
Closing Phase	15 min	• Q&A about the presented topics and feedbacks collections	• Clarifing contents and collect information for improvements	• Discussion	• None	• Trainer • All participants

Post-course phase

Project work to be completed until 2 weeks after the course. To be uploaded on learning platform.

1 Nr. | Module

V – Leadership and management

2 Nr. | Course Title

V – 2: Leadership styles

3 Course Format

The course will be based on interactive classes. Different tools will be used during the classes like videos, songs, poll systems (poll everywhere), personality and leadershio diagnostic tools (developed on Qualtrics latform)

4 Key Data

Scope (class hours): 8 working units á 45 min. each (6 hours)
ECTS: 1,5 (recommended)

5 Learning Outcomes

- Gain understanding about different leadership approaches and styles
- Be able to reflect on personal leadership qualities and values
- Learn how to apply different leadership styles in different professional contexts or situations

6 Overall Contents

- Leadership in an interconnected world: trends and challenges
- What makes a good leader? Traits and skills
- Leadership culture and personal values (e.g. ethical standards)
- Introduction into leadership research: traditional and novel approaches
- Traditional and innovative leadership styles (e.g. democratic, autocratic, transformational)
- Principles of democratic leadership (e.g. holocracy)
- Practical implications: successful leadership in different professional contexts

7 Overview of Teaching Methods

- Short inputs
- Reflection on own leadership style
- Group discussion
- Exchange of experience

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience

- PhD students with little or no previous knowledge.
- Participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

For lager groups (more than 30 persons) it is recommended to leverage more on on big class interaction tools (pollEverywhere, Socrative…)

10 Course materials / reading list

Include a list of material:
Slides
Ted talks:

- Everyday Leadership: Drew Dudley
- Derek Sivers: How to start a movement

List of suggested movies to see (optional):

- Adam 2009
- The Devil Wears Prada (2006)
- Sister Act (1992)
- Any Given Sunday (1999)
- School of Rock (2003)
- The Karate Kid (1984)
- Pay it forward (2000)
- Invictus (2009)
- Whiplash (2014)

Course Outline for Trainers

Pre-course Phase |Preparation List

Send materials to participants two weeks in advance

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory Phase	15 min	• Welcome, Agenda • Self-presentation of participants • Course Positioning	• Creating a good working atmosphere • Participants get to know each other	• Presentation	• Slides • Flipcharts	• Trainer • All participants
Working Phase	45 min	• intro what is leadership	• Relax the audience, leadership is not an exceptional thing	• Presentation • Class Discussion • Small-team activity	• Slides • Flipcharts • Ted Talk: Everyday Leadership: Drew Dudley	• Trainer • All participants
	45 min	• nature or nurture traits theory	• Start the journey into leadership theories • Discover that old and outdated models are still very influent nowadays	• Presentation • Class Discussion	• Slides • Flipcharts • Movie Clips	• Trainer • All participants
	45 min	• Behavioural Models Managerial Grid	• Identify different leadership behaviours • Connect behaviours and context	• Presentation • Class Discussion • Small-team activity	• Slides • Flipcharts • Movie Clips	• Trainer • All participants
	45 min	• The role of followers Attribution Theory first follower	• Exploring the role of first (fast) followship in leadership	• Presentation • Class Discussion	• Slides • Flipcharts	• Trainer • All participants

					• TED Talk: Derek Sivers: How to start a movement	
	45 min	• Situational Leadership	• Describe the model (axes and quadrants)	• Presentation • Class Discussion • Small-team activity	• Slides • Flipcharts • Movie Clips	• Trainer • All participants
	45 min	• Situational Leadership	• Investigate the model application	• Presentation • Class Discussion	• Slides • Flipcharts •	• Trainer • All participants
	45 min	• Transactional Leadership	• Definition of the transaction as basis for the leadership process	• Presentation • Class Discussion •	• Slides • Flipcharts •	• Trainer • All participants
	45 min	• Transformational Leadership	• Introduce the Transformational Approach	• Presentation • Class Discussion	• Slides • Flipcharts • Movie Clips	• Trainer • All participants
	45 min	• Transactional/ Transformational Leadership	• Compare the two models and their areas of application	• Presentation • Class Discussion	• Slides • Flipcharts • Movie Clips	• Trainer • All participants
	45 min	• Principles of democratic leadership (e.g. holocracy)	• Introduce new trends in Leadership	• Presentation • Class Discussion	• Slides • Flipcharts • Movie Clips	• Trainer • All participants
	45 min	• Shared & Servant Leadership	• Introduce emerging and agile Leadership Styles	• Presentation • Class Discussion	• Slides • Flipcharts • Movie Clips	• Trainer • All participants
	45 min	• Team Leadership: trust building	• Underpin the importance of trust in the team building process through the JoHari model	• Presentation • Class Discussion	• Slides • Flipcharts	• Trainer • All participants
	45 min	• Team Leadership: trust building	• Underpin the importance of trust in the team building process through the JoHari model	• Presentation • Class Discussion	• Slides • Flipcharts	• Trainer • All participants

	45 min	• Team Leadership: feedbacks	• Explore the use of feedbacks and its role on trust building	• Presentation • Class Discussion • Team Activity	• Slides • Flipcharts • Movie Clips	• Trainer • All participants
	45 min	• Team Leadership: feedbacks	• Explore the use of feedbacks and its role on trust building	• Presentation • Class Discussion	• Slides • Flipcharts • Movie Clips	• Trainer • All participants
Closing Phase	30 min	• Closing experience • Action Plan • Feedbacks	• Wrapping-up the experience and check for the insights	• Presentation • Class Discussion	• Flipcharts	• Trainer • All participants

Post-course phase

Select a movie (among a pre-defined set) and use at least two of the models to “read” the characters.

1 Nr. | Module

V – Leadership and management

2 Nr. | Course Title

V – 3: Human Resources Management

3 Course Format

The course will be taught with a blended learning approach, with some modules online.
Switching to fully online version will be possible in case it will be needed

4 Key Data

Scope (class hours): 8 working units á 45 min. each (6 hours)
ECTS: 1,5 (recommended)

5 Learning Outcomes

- Gain an understanding of the basics of human resource management in start-up companies
- Understand the relevance of human resources in start-ups and their role in innovations
- Understand fundamental challenges to acquire and manage a start-up´s workforce and how to overcome them
- Understand the relation between top management team composition and company success
- Reflect upon one´s own potential as thought leader
- Improve interpersonall and collaborative skills

6 Overall Contents

- Fundamentals of human resource management
- Human resource management in start-ups as key success factor: war for talent, value creation and innovation
- Personnel recruitment, selection and retention in start-ups (incentives and challenges, remuneration models)
- Top management team composition and company success
- Common mistakes and how to avoid them
- Implementating of human resource management systems

7 Overview of Teaching Methods

- Short inputs
- Case examples
- Exercises in teams / group work
- Group presentations
- Reflection

8 Target Group

Qualification phase
- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience

- PhD students with little or no previous knowledge.
- Participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions by webinars.

10 Course materials / reading list

The commented slides will be distributed.
It is recommended to anticipate written or video materials e.g.
Regina Hartley
Why the best hire might not have the perfect resume
https://www.ted.com/talks/regina_hartley_why_the_best_hire_might_not_have_the_perfect_resume?referrer=playlist-talks_to_help_you_negotiate

Course Outline for Trainers

Pre-course Phase |Preparation List

Participant will receive and read the case Henkel: Building a Winning Culture Robert L. Simons, Natalie Kindred https://hbsp.harvard.edu/product/112060-PDF-ENG?Ntt=human+resources&itemFindingMethod=Search the case will be used post-course but must be read before to help them in the interpretation during class

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory Phase	15 min	• Welcome, Agenda • Self-presentation of participants • Most important question	• Creating a good working atmosphere • Participants get to know each other	• Presentation	• Flip charts, post-its and PollEV	• Trainer • All participants
Working Phase	45 min	• Explain and Define What is Human Resource Management (HRM)	• Relax the audience, leadership is not an exceptional thing	• Presentation • Class Discussion • Small-team activity	• Slides • Flipcharts • PollEV •	• Trainer • All participants
	45 min	• Describe the Processes in HRM	• Start the journey into HRM • Discover the main objectives and historical evolution	• Presentation • Class Discussion • Small-team activity	• Slides • Flipcharts • PollEV •	• Trainer • All participants
	45 min	• Hiring and Retention Strategies	• The main steps, objectives and constraints of the hiring process • Strategies to retain employees, from	• Presentation • Class Discussion • Small-team activity	• Slides • Flipcharts • PollEV	• Trainer • All participants

			compensations to development			
	45 min	• Compensation & Benefits	• How to manage strategically the compensation. Hybrid systems. How to go beyond MBO	• Presentation • Class Discussion • Small-team activity	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• Performance Management	• The performance management process. The objective definition. The appraisals and the assessment feedback	• Presentation • Class Discussion • Small-team activity	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• Human Resource Development	• HR as a tool for development. Competence model definition, update and use.	• Presentation • Class Discussion • Small-team activity	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• Strategic Human Resource Management	• Leveraging HR to speed the organizational transformation.	• Presentation • Class Discussion • Small-team activity	• Slides • Flipcharts • PollEV	• Trainer • All participants
Closing Phase	30 min	• List the Tips for Effective HRM	• Final Wrap up and main takeways	• Class Discussion	• PollEV	• Trainer • All participants

Post-course phase

Essay to be written answering basic questions about
Henkel: Building a Winning Culture
Robert L. Simons, Natalie Kindred
https://hbsp.harvard.edu/product/112060-PDF-ENG?Ntt=human+resources&itemFindingMethod=Search

1 Nr. | Module

V – Leadership and management

2 Nr. | Course Title

V – 4: Job interviews and negotiation skills

3 Course Format

The course will be taught with a blended learning approach, with some modules online.
Switching to fully online version will be possible in case it will be needed

4 Key Data

Scope (class hours): 16 working units á 45 min. each (12 hours)
ECTS: 2,5 (recommended)

5 Learning Outcomes

- Learn how to plan and conduct interviews successfully in different professional settings
- Know how to ask the right questions
- Gain understanding of different negotiation techniques and how to apply them efficiently

6 Overall Contents

- How to conduct an interview? Success factors and quality criteria
- Interviews in different professional contexts: interview types, approaches and objectives
- Conducting and participating in job interviews
- Interviewing techniques
- Question types (e.g. leading, meta questions)
- Negotiation techniques (e.g. BATNA, Harvard concept) and how to apply them

7 Overview of Teaching Methods

- Short inputs
- Practical exercises (e.g. role play)
- Peer interviews and interviews with trainers
- Analysis with feedback
- Simulation of negotiations with videofeedback

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience

- PhD students with little or no previous knowledge.
- Participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions by webinars.

10 Course materials / reading list

The commented slides will be distributed.
It is recommended to anticipate written or video materials e.g.

HBR Guide to Your Professional Growth
Harvard Business Press

HBR Guide to Negotiating
Jeff Weiss – Harvard Busienss Publishing

Course Outline for Trainers

Pre-course Phase |Preparation List

- Sending the materials as pre-course reading assignments

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory Phase	10 min.	• Welcome, Agenda • Self-presentation of participants • Most important question	• Creating a good working atmosphere • Participants get to know each other	• Presentation	• PollEV	• Trainer • All participants
Working Phase	45 min.	• How to conduct an interview? Success factors and quality criteria	• Structuring an interview in the role of recruiter through questions functional to the objective of the interview	• Presentation • Small team workgroup	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min.	• How to conduct an interview? Success factors and quality criteria	• Effectively manage an interview in the role of candidate by responding appropriately (communication and interaction) to the interviewer's questions	• Team workgroup • Debrief	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min.	• Interviews in different professional contexts: Company	• Interview with HR / Line Manager of a company: examples of questions and approaches	• Presentation	• Slides • Flipcharts • PollEV	• Trainer • All participants

	45 min.	• Interviews in different professional contexts: Head Hunter	• Interview with a recruiter from a research and selection company: examples of questions and approaches	• Individual work • Debrief	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min.	• Conducting and participating in job interviews	• know and deepen the selection techniques in conducting interviews and offer suggestions to better manage the answers	• Presentation • Small team workgroup	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min.	• Interviewing techniques: STAR method	• definition of the STAR method for conducting an interview in the role of recruiter / hr and suggestions for answering questions effectively in the role of candidate	• Presentation • Small team workgroup	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min.	• Interviewing techniques: Behavioural Event Interview (BEI)	• know and deepen the techniques of the behavioral interview based on real situations of professional life: when to use it and in what professional context. Tips to guide you in the role of recuiter and to respond effectively in the role of candidate	• Presentation • Small team workgroup	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min.	• Interviewing techniques: Stress Interview	• deepen the method of the stress interview, in what context to use it, what questions to ask in	• Presentation	• Slides • Flipcharts • PollEV	• Trainer • All participants

			the role of recruiter and ideas to respond effectively to questions in the role of candidate			
	45 min.	• Interviewing techniques: assessment techniques	• know the methodology of individual and group assessment and effectively manage the motivational and behavioral interview on a model of skills defined both in the role of recruiter and in the role of candidate	• Presentation • Small team workgroup	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min.	• Question types: structure	• structuring the type of interview most suited to the skills to be detected in the candidate	• Team work • Debrief	• Exercise • PollEV	• Trainer • All participants
	45 min.	• Question types: recruiter/HR	• identify the type of questions appropriate to the competence to be assessed: questions on relational, cognitive and meta competencies (stress and leadership), behavioral, situational, open, closed, and know the questions most asked during the selection phase	• Presentation	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min.	• Question types: candidate	• identify how to answer the different types of questions in order to demonstrate a good control of the	• Presentation • Class discussion	• Slides • Flipcharts • PollEV	• Trainer • All participants

			competences observed by the recruiter			
	45 min.	• Negotiation techniques (e.g. BATNA, Harvard concept) and how to apply them	• know the negotiation techniques related to the optimal management of relationships in order to be effective in proposing one's ideas: the theory of colors (4colors)	• Presentation • Class discussion	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min.	• Negotiation techniques (e.g. BATNA, Harvard concept) and how to apply them	• know the negotiation techniques most related to career management: salary negotiation	• Presentation	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min.	• Negotiation techniques (e.g. BATNA, Harvard concept) and how to apply them	• role play	• Simulated game • Debrief	• Simulation • PollEV	• Trainer • All participants
Closing Pha	30 min	• Wrap up and final discussion	• Final Wrap up and main takeways	• Class Discussion	• PollEV	• Trainer • All participants

Post-course phase

none

Project work to be completed until 2 weeks after the course. To be uploaded on learning platform.

1 Nr. | Module

V – Leadership and management

2 Nr. | Course Title

V – 5: Relationship management: coaching, guidance, motivation; team and management development; conflict management

3 Course Format

The course will be taught with a blended learning approach, with some modules online.
Switching to fully online version will be possible in case it will be needed

4 Key Data

Scope (class hours): 16 working units á 45 min. each (12 hours)
ECTS: 2,5 (recommended)

5 Learning Outcomes

- How to create and maintain excellent relationships to form a high-performance team
- Be aware of the dynamics of personal and professional change processes
- Gain understanding of typical group development phases and challenges on the way to team excellence
- Learn how to identify and deal with conflicts constructively

6 Overall Contents

- Dynamics of personal and professional change: coaching, guidance and motivation
- Working in teams: phases of group/team development (e.g. Tuckman)
- What makes a high performance team?
- Challenges for members and management and how to overcome them
- Integrating multifunctionality
- Recognising and managing conflicts
- Developing skills out of the comfort zone

7 Overview of Teaching Methods

- Short inputs
- Practical exercises (e.g. role play)
- Three MOOCs will cover the following topics: managing changes; working in multidisciplinary teams; managing conflicts.

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience

- PhD students with little or no previous knowledge.
- Participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to organize some offline activities (send a list of questions before lesson start for example).
For students from distant countries it is possible to organize remote learning sessions by webinars.

10 Course materials / reading list

The commented slides will be distributed.
It is recommended to anticipate written or video materials e.g.

Herrmann, N., 1991. The creative brain. Journal of Creative Behavior, 25(4), pp.275-95.
Thomas, K.W., 1992. Conflict and conflict management: Reflections and update. Journal of organizational behavior, pp.265-274.
Thomas, K.W., 2008. Thomas-kilmann conflict mode. TKI Profile and Interpretive Report, pp.1-11.
Tuckman, B.W., 1965. Developmental sequence in small groups. Psychological bulletin, 63(6), p.384.

Dan pink
The puzzle of motivation
https://www.ted.com/talks/dan_pink_the_puzzle_of_motivation

Dan Ariely:
What makes us feel good about our work?
https://www.ted.com/talks/dan_ariely_what_makes_us_feel_good_about_our_work

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course structure
- Preparing course contents, methods & materials
- Conducting survey on course expectations of participants; accordingly, adaptations to the course (if applicable)
- Course organisation (registration of participants, room booking, catering, conference tool etc.)

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	10 min	• Welcome, Agenda • Self-presentation of participants • Most important question	• Creating a good working atmosphere • Participants get to know each other	• Presentation	• PollEV	• Trainer • All participants
Working Phase	45 min	• mapping the stakeholders: The whole brain model	• Identifying the importance to adapt one's behavior according to the stakeholder • Introducing the Whole Brain model	• Presentation • Small team workgroup	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• mapping the stakeholders: The whole brain model- APPLICATION	• Understanding how to apply the model	• Team workgroup • Debrief	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• What motivates people: the basics of motivation (Maslow, McClelland…)	• Introducing the basic concepts of motivation	• Presentation	• Slides • Flipcharts • PollEV	• Trainer • All participants

	45 min	• Difference between Intrinsic and Extrinsic Motivation-APPLICATION	• Understanding the difference between I-E motivation • Understand what motivate you as individual	• Individual work • Debrief	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• The hygiene factors: Herzberg	• Introducing the difference between de-motivated and not-motivated	• Presentation • Small team workgroup	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• Theory of equity: Adam	• The theory of equity and its limits in transformational environments	• Presentation • Small team workgroup	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• MBO and OKR	• Understanding the difference between the two methods	• Presentation • Small team workgroup	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• Self Determination Theory	• Getting the power of self motivation and how to trigger it	• Presentation	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• Groups and Teams: phases of team development (Tuckman)	• Introducing the forming, storming, norming, performing (adjourning) model	• Presentation • Small team workgroup	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• Groups and Teams: phases of team development (Tuckman)-APPLICATION	• Identify the current status of a team	• Team work • Debrief	• Exercise • PollEV	• Trainer • All participants
	45 min	• What makes an high performance team: feedback - Tecniques	• Basics of feedback techniques	• Presentation	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• The power of feedback: Radical Candor	• Kim Scott model and discussion	• Presentation • Class discussion	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• The importance of conflicts	• How conflicts are beneficial to the	• Presentation • Class discussion	• Slides • Flipcharts	• Trainer • All participants

			organization and team dynamics		• PollEV	
	45 min	• TKI-Thomas Kilmann conflict modes	• Introduction to the model	• Presentation	• Slides • Flipcharts • PollEV	• Trainer • All participants
	45 min	• TKI-Thomas Kilmann conflict modes-APPLICATION	• Understanding when each style is beneficial	• Simulated game • Debrief	• Simulation • PollEV	• Trainer • All participants
Closing phase	30 min	• Wrap up and final discussion	• Final Wrap up and main takeways	• Class Discussion	• PollEV	• Trainer • All participants

Post-course phase

Essay to be written about how to apply at least 2 of the models to characters in a movie. To be uploaded on learning platform.

1 Nr. | Module

V – Leadership and management

2 Nr. | Course Title

V – 6: Assessment and analysis of gender and other cognitive biases

3 Course Format

The course will be taught both with frontal lessons and flipped classroom, in which the students, after their own reading of selected material given by the teachers will present their own findings. Discussions after watching together selected videos of specific social interactions in different contexts will also be programmed. We believe that personal experimentation and autonomous study is key to raise a genuine awareness of the topics. Specific help from students of different nationalities will be asked to select materials that are representative of the same topic in different cultures, and students will be asked to present to the class their personal feelings and observations on the discussed topics as seen from the lens of their home culture.

4 Key Data

Scope (class hours): 16 working units, 45 min. each (12 hours) ECTS: 2,5 (recommended)

5 Learning Outcomes

- Be aware of the cultural and ancestral mechanisms that give rise to role congruity models, which are the basis for the development of gender stereotypes
- Know the concept of conscious and unconscious biases, to show that the latter is present in (almost) all individuals, ourselves included
- Introduce gender biases together with other diversity-related stereotypes (e.g., ethnicity, age, …) and point out the peculiar role of intersectionality in the bias context.
- Understand the overarching role of language in the rooting of the biases in the discourse.
- Be aware of and gain understanding of gender biases and of their impact in diverse professional settings
- Appreciate the interaction between biases and technology, with particular reference to automatic reasoning, to understand that AI can indeed perpetrate the existing biases

6 Overall Contents

- A neural origin of biases
- Semantics of cognitive and gender biases: a linguistic approach
- The role congruity models and their rooting in society
- The effects of cognitive biases on organizations and communities: the case of gender stereotypes
- The impact of gender stereotypes in corporate settings and the issues of intersectionality
- The inter-relations between cognitive biases and artificial intelligence and the role of “fair learning”

7 Overview of Teaching Methods

- Short frontal inputs
- Practical case examples
- Text analysis
- Experience exchange
- Students presentations of selected material

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning of their qualification phase (but can attend PhD students at any time during their PhD studies), possibly coming from different cultures and backgrounds

Prior knowledge or experience

- PhD students with little or no previous knowledge.
- Participants with previous experience can deepen their knowledge

A class of 15 students at most would be optimal, in order to promote exchanges and individual participation

9 Tips for implementation | Adjustments

For larger groups (more than 30 persons) it is recommended to try and split them in smaller classes. If not possible, increase the overall duration of the course to plan for longer interactive sessions.

According to the actual cultural spread in the class due to possible very different origins of the students, an online adjustment of the balance between gender and other minority-related stereotypes is possible, in order to maximise the participation of the students and value their personal background

If all the students come from scientific/technological disciplines more emphasis on the link with technology tools can be given, and small experimentations with NLP approaches for language analysis and/or AI-based decision making can be added to the program.

10 Course materials / reading list

Teachers' slides
Scientific papers
Selected newspapers articles
Selected videos for own and common watching and discussion

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course structure
- Preparing course contents, methods & materials
- Conducting survey on course expectations of participants; accordingly, adaptations to the course (if applicable)
- Course organisation (registration of participants, room booking, catering, conference tool etc.)
- Sending material to participants two weeks in advance

Day 1 Morning

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media ! Material	Active Participants
Introductory phase	30min	• Welcome, Agenda • Self-presentation of participants • Most important question	• Creating a good working atmosphere • Participants get to know each other	• Presentation	• Slides	• Trainer • All participants
Working phase	45 min	• Neural origin of biases	• Understand gender stereotypes under a neuroscience perspective	• Presentation	• Slides	• Trainer • All participants
	45 min	• Neural origin of biases	• Be aware of how unconscious biases affect everyone	• Discussion on personal experiences	• Videos	• Trainer • All participants
Closing phase	15 min	• Lessons learnt	• Recap take-home messages	• Presentation composed on the fly together	• None	• Trainer • All participants

Day 1 – Afternoon

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	30 min	• Introduction to the topic of „the language of stereotypes and biases“	• Introduce the link between language and cognitive biases	• Presentation •	• Slides • videos	• Trainer • All participants
Working phase	45 min	• Linguistics: a primer	• Master the basic linguistic language and tools	• Presentation	• slides	• Trainer • All participants
	45 min	• How gender bias transmit themselves through verbal and non-verbal language	• Show how language based relations are affected by many biases	• Presentation	• Slides • Videos • Audio registrations	• Trainer • All participants
	45 min	• Direct experimentation of language-based stereotypes	• Let students rework the information they had	• Students‘ group work	• Videos •	• • All participants

Closing phase	15 min	• Lessons learnt	• Share and recap the main messages	• Joint work on a final list of key messages	• none	• Trainer • All participants

Day 2 – Morning

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	30 min	• Introduction on the impact of gender stereotypes in social relations	• Introduce the topic and set the agenda for the morning. Present the students the paper they will work on later	• Presentation	• slides	• Trainer • All participants
Working phase	45 min	• Gender stereotypes in business contexts and in the enterpreneurial setting	• Show how gender biases impact on business contexts	• presentation	•• slides	• Trainer • All participants
	45 min	• Male-dominated • industries and their specificities	• Illustrate the concept of horizontal and vertical segregation	• presentation	•• slides	• Trainer • All participants
	45 min	• Students perform selected readings	• Allow deepening one of the discussed topics	• Own reading from students	•• papers	• All participants
	45 min	• Student present main ideas of the papers they read	• Promote discussion and personal views	• Students oral presentation and discussion	•• None	• Trainer • All participants

Closing phase	15 min	• Lessons learnt	• Define take-home messages	• Joint work on a final list of key messages	• none	• Trainer • All participants

Day 2 – Afternoon

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory Phase	30 min	• Introduction on the possible role of technology in perpetrating • biases	• Show students that automatic reasoning is not implicitly bias free	• presentation	• slides	• Trainer • All participants
Working Phase	30 min	• Outline of diversity and inclusion technological tools	• Show of technology can help supporting diversity and inclusion	• presentation	• slides	• Trainer • All participants
	45 min	• The issue of „fair learning“	• Understand the main concepts behind the strive for fair learning and its • impact	• presentation	• Slides papers	• Trainer • All participants
Closing Phase	30 min	• Closing remarks and wrap up	• Close the course and share impressions	• discussion	• none	• Trainer • All participants

Day 3 – Morning

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	30 min	• Introduction and outline of the final work	• Definition of the final work students are asked to produce	• presentation	• slides	• Trainer • All participants
Working phase	30 min	• Students splitting into groups of 2/3 and choosing working topics	• Create working groups and let students choose a topic • to work on	• Autonomous work	• none	• All participants
	45 min	• Preliminary literature analysis to investigate the chosen literature	• Have students starting selecting papers to study and frame their work contents	• Autonomous work with teacher supervision	• Scientific papers	• Trainer • All participants

Closing phase	30 min	• Final topic assignment and closing of the course	• Define the topic for he essay/final presentation of he working groups and • share final thoughts on the • course	• Discussion	• Google form to collect students impressions (to be filled in after the course • end)	• Trainer • All participants

Post-course phase

Essay to be written within 1 month after course end. Preparation of a 15 mins presentation to be given to all participants and teachers via Skype video call.

Module VI: Publication and Promotion

1 Nr. | Module

VI – Publication and Promotion

2 Nr. | Course Title

VI – 1: Project Marketing and Dissemination

3 Course Format

The course will be taught as a classroom teaching or online course.

4 Key Data

Scope (class hours): 8 working units á 45 min.
ECTS: 1 (recommended)

5 Learning Outcomes

- Be familiar with project marketing as a key instrument of project management
- Have an overview of the tools, operating modes and chances of project marketing
- Know how to use project marketing to enhance project success
- Know dissemination fundamentals and how to develop a successful dissemination strategy

6 Overall Contents

- Fundamentals of project marketing
- Developing a project marketing plan
- Field analysis and planning
- Traditional and modern marketing channels and instruments
- Project flyers, press releases and conferences
- Online publications, e.g. blogs, wikis, videos, Twitter, media sharing
- Fundamentals of dissemination m
- Developing a successful dissemination strategy
- Challenges and solutions in dissemination

7 Overview of Teaching Methods

- Input
- Exercises (e.g. writing exercise with feedback)
- Group discussions
- Working with participants' examples
- Online content and exercises (e.g. blogs, wikis, videos)
- Roleplay

8 Target Group

Qualification phase

- Recommended: PhD students in the 2nd phase/ at the end of their qualification phase

Prior knowledge or experience

- PhD students with little or no previous knowledge
- Participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

Group Size
For lager groups than 16 participants allow for up to 5 persons in the exercises. Consequently, the time for group work needs to be extended accordingly.

10 Course materials / reading list

The slides and case studies will be distributed at least at the beginning of the course.

Recommended literature/case studies:

- https://www.abida.de/en
- https://www.neuroinflammation.eu/en/home
- Rodney Turner, J. and Lecoeuvre, L. (2017), "Marketing by, for and of the project: project marketing by three types of organizations", International Journal of Managing Projects in Business, Vol. 10 No. 4, pp. 841-855. https://doi.org/10.1108/IJMPB-10-2016-0080
- Kleinaltenkamp, Michael, Plinke, Wulff, Geiger, Ingmar (2016), „Business project management and marketing: Mastering Business Markets", Springer, https://link.springer.com/book/10.1007%2F978-3-662-48507-1
- Turner, J.R., Lecoeuvre, L., Sankaran, S. and Er, M. (2019), "Marketing for the project: project marketing by the contractor", International Journal of Managing Projects in Business, Vol. 12 No. 1, pp. 211-227. https://doi.org/10.1108/IJMPB-10-2017-0118
- Kreutzer, Ralf (2019), "Toolbox for Marketing and Management", Springer, https://link.springer.com/book/10.1007%2F978-3-030-13823-3#about

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course structure
- Preparing course contents, methods & materials
- Conducting survey on course expectations of participants; accordingly, adaptations to the course (if applicable)
- Course organisation (registration of participants, room booking, catering, conference tool etc.)

Break times: 60 min lunch break, 2x15 min coffee breaks

Day 1

Course Phase	Duration	Contents	Objectives	Teaching Methods	Media | Material	Active participants
Introductory phase	30 min	**Introduction** • Welcome • Agenda • Self-presentation of trainer • Self-presentation and expectations of participants • Introduction to workshop objectives & methods	• Participants get to know what the course will be about and how it will be implemented • Trainer and participants get to know each other • Creating a constructive and positive working atmosphere	• Presentation	• Power Point slides • Flipchart	• Trainer • All participants
Working phase 1	45 min	**Basics** • The aim of project marketing • What is project marketing? • Marketing during the different states of a project • Transfer	• Participants learn the differences between project marketing and marketing • Participants gain knowledge on transfer and how to apply this knowledge to their project	• Presentation • Plenary discussion	• Power Point slides • Flipchart • Moderation cards	• Trainer • All participants

Working phase 2	60 min	**Target groups and stakeholder analysis** • Audiences and target groups • Who is it projects want to inform? • Competition and striving for attention • Stakeholder analysis	• Participants are able to identify different stakeholders • Students learn how to evoke attention via communication • Participants know how to conduct a stakeholder analysis	• Exercise • Input • Discussion	• Power Point Slides • Flipchart • Examples of successful press releases and stakeholder analysis	• Trainer • All participants
Working phase 3	105 min	**Plan, do, check, act cycle for project marketing (Part 1)** • Presentation of plan, do, check, act cycle • PDCA as a means of quality assurance and risk management • The structure of marketing plans	• Participants know how to compose a marketing plan • Participants learn to develop a catchy slogan for the project • Participants are aware of the impact of target group specific communication	• Input • Discussion • Roleplay (30 minutes)	• Power Pont Slides • Flipchart • Role descriptions for roleplay (user, scientific community, client)	• Trainer • All participants • Small groups of students
Working phase 4	75 min	**Plan, do, check, act cycle for project marketing (Part 2)** • Presentation of selected measures • The power of marketing – how to sell your research	• Participants reflect the pros and cons of communication strategies • Participants learn to foster their self-marketing skills	• Input • Discussion • Presentation	• Power Pont Slides • Flipchart	• Trainer • All participants
Working phase 5	75 min	**Design of marketing plans** • What to keep in mind when designing a project marketing plan	• Participants know how to write a project marketing plan form the scratch	• Exercise • Discussion	• Worksheet	• All participants • Trainer

		• Hands on approach – Design a plan for your own project • Questions & answers				

Day 2

Course Phase	Duration	Contents	Objectives	Teaching Methods	Media | Material	
Working phase 6	30 min	**Introduction and presentation of resources** • Presentation of departments at your own institution that provide help and resources for project marketing, i.e., public affairs, libraries, marketing department, books/publications	• Participants know where to turn to if they need help • Participants learn to recruit supporters	• Input • Presentation of literature	• Websites of own institution (library, public affairs) • Books	• Trainer
Working phase 7	90 min	**Dissemination fundamentals** • Definition of dissemination • Open source and open access as tools for dissemination • Getting in touch with non-scientists via science slams, videos, and podcasts	• Participants learn how to communicate their research to a non-scientific audience • Participants are able to develop a dissemination strategy • Participants are familiar with the terms of open access/open resource publications	• Input • Interactive mind map • Presentation of legal texts • Discussion	• YouTube videos • Power Point slides • Mindmaps • Podcasts	• Trainer • All participants

Working phase 8	150 min	**Getting to action with one's own project** • Participants are offered the opportunity to design a website, blog, logo, press statement under supervision of the trainer • Presentation of the results	• Participants gather experience in designing the marketing for their project • Participants are able to set concepts into actions	• Exercise • Supervision	• Exemplary blogs/websites • PC/Laptop • Coloured paper	• All Participants • Trainer
Closing phase	60 min	**Q&A, wrapping up, evaluation** • Q&A about the presented topics and feedbacks collections • Course evaluation • Outlook	• Quality assurance • Participants reflect on their learning outcomes	• Discussion • Feedback circle („flashlight") • Online evaluation	• Online questionnaire	• All Participants • Trainer

Post-course Phase

Course documentation to be sent to participants (photo protocol and presentations). Lessons learned, results of evaluation Transfer evaluation

1 Nr. | Module

VI – Publication and Promotion

2 Nr. | Course Title

VI – 2: Science Communication

3 Course Format

The course will be taught as a classroom teaching or online course.

4 Key Data

Scope: 6 working units á 45 min in class, 2 working units á 45 min out of class.
ECTS: 2 (recommended)

5 Learning Outcomes

- Be able to present project and research results in a targeted manner, both within a discipline and to the general public
- Be able to structure complex content to make it understandable to experts and laypersons
- Be able to prepare complex topics in a target-group-oriented, comprehensible and compelling way

6 Overall Contents

- Fundamentals of science communication
- Academic and non-specialist audiences as target groups: specifics, challenges and strategies
- Storytelling in science journalism
- Preparing and presenting research topics and their relevance to academic experts
- Preparing and presenting research topics and their relevance to laypersons

7 Overview of Teaching Methods

- Interactive presentation / lecture
- group work, pair work, individual work
- Individual feedback
- Practical exercises

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning / in the 2nd phase / at the end of their qualification period (suitable for all stages)

Prior knowledge or experience

- PhD students with little or no previous knowledge

9 Tipps for implementation | Adjustments

Group Size
For lager groups than 16 participants allow for up to 5 persons in the exercises. Consequently, the time for group work needs to be extended accordingly.

10 Course materials / reading list

Dahlstrom, M. F. (2014). Using narratives and storytelling to communicate science with nonexpert audiences. *Proceedings of the National Academy of Sciences*, *111* (Supplement 4), 13614-13620. https://doi.org/10.1073/pnas.1320645111

Nan, X., Dahlstrom, M. F., Richards, A., & Rangarajan, S. (2015). Influence of evidence type and narrative type on HPV risk perception and intention to obtain the HPV vaccine. *Health Communication*, *30*(3), 301-308. https://doi.org/10.1080/10410236.2014.888629

NYGAARD, L. P. (2009) *Writing for Scholars*: *A Practical Guide to Making Sense and Being Heard.* Universitetsforlaget.

Lakoff, G. (2010). Why it matters how we frame the environment. *Environmental Communication,* 4:1, 70-81. https://doi.org/10.1080/17524030903529749

Taylor, C., Dewsbury, B. M. (2018). On the problem and promise of metaphor use in science and science communication. *Journal of Microbiology & Biology Education,* 19:1. https://dx.doi.org/10.1128%2Fjmbe.v19i1.1538

Course Outline for Trainers

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	15-30 min	**Course welcome and Introductions**	• to introduce the course • to create a good working atmosphere	• plenary discussion		• Trainer • All participants
Working phase 1	45 min	**Genres of Science Communication** • conventions and model products • typical patterns and characteristics • examples and analysis	• to introduce model products, their conventions, patterns, characteristics • to encourage reflection	• Interactive presentation • Short discussion tasks	• PPT Presentation • Projector – sound and internet needed • Flip chart • laptops	• Trainer • All participants
Working phase 2	45 min	**Lecture: Tools for Sci Comm** • Cog Ling and rhetorics: mechanisms • metaphors, narratives, framing • theory and evidence	• to introduce useful tools • to reflect on the theory and empirical evidence • to link theory to good practice •	• Interactive presentation • Short discussion tasks	• PPT Presentation • Projector – sound and internet needed • Flip chart • laptops	• Trainer • All participants
Working phase 3	45 min	**Drafting own product(s) 1.** • Individual work: drafting own products • Using (own) model products	• to start drafting own product(s)	• Individual work • ("Shut up and write" session)	• laptops	• Trainer • All participants

		• Using knowledge & insights gained in the Input phase	to apply insights from the lectures			

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Working phase 4	2x45 mins	**Drafting own product(s) 2.** • Revising own drafts • feedback	• To continue working on own drafts • To get feedback from the instructors and peers	• Individual work • Group work	• Laptops • own drafts	• Trainer • All participants
Closing phase	30 min	**Wrapping up** • Final Q&A • Course evaluation	• to clarify concepts • to answer remaining questions • to collect information for course improvement	• Plenary discussion	• course evaluation forms	• Trainer • All participants

Post-course phase

Course documentation to be sent to participants (photo protocol and presentations).
Lessons learned, results of evaluation
Transfer evaluation

1 Nr. | Module

VI – Publication and Promotion

2 Nr. | Course Title

VI – 3: Pitching Research to Key Audiences

3 Course Format

The course will be taught as a classroom teaching.

4 Key Data

Scope (class hours): 4 working units á 45 min
ECTS: 0,5 (recommended)

5 Learning Outcomes

- Be able to present a core research message in a convincing manner within a very short time, both within a discipline and to the general public
- Know how to communicate core research messages on the spot

6 Overall Contents

- Strategic planning of successful pitches: topic/core message, target group(s)
- Connecting with the audience
- Core message: structure, content, and reasoning
- Design and characteristics of influential presentations:
- Rhetorical elements and presence

7 Overview of Teaching Methods

- Interactive presentation / lecture
- Individual and group exercises
- Presentations and pitches (90 seconds)
- Feedback (peer and instructor)

8 Target Group

Qualification phase

- PhD students in the 2nd phase / at the end of their qualification period

The same group of PhD candidates that took Module VI-2 Science Communication (if the two modules are not merged, see also tipps for implementation below)

Prior knowledge or experience

- PhD students with previous knowledge in Science Communication

9 Tipps for implementation | Adjustments

This course should be scheduled after the Module VI-2 Science Communication course.
Ideally, the content and duration of this course should be part of Module VI-2 – simply add one more day.

10 Course materials / reading list

Dahlstrom, M. F. (2014). Using narratives and storytelling to communicate science with nonexpert audiences. *Proceedings of the National Academy of Sciences*, *111* (Supplement 4), 13614-13620. https://doi.org/10.1073/pnas.1320645111

NYGAARD, L. P. (2009) *Writing for Scholars*: *A Practical Guide to Making Sense and Being Heard.* Universitetsforlaget.

Course Outline for Trainers

Pre-course Phase |Preparation List

Select an audience you want to craft a pitch for. Based on what you learned in Module VI-3, choose an audience from the three prototypical groups (other researchers, user groups, the general public) but be as specific as you can when defining the audiences.

Course Phase	Time	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Input phase	45 min	• Introduction to VI-4: Pitching your research: Audience, Purpose, Conventions (as a quick revision / recap from Module VI-3)	• to create a good working atmosphere • to introduce the topic • to guide participants towards their own pitch	• Interactive presentation	• PPT Presentation • Projector – sound and internet needed • Flip chart, or Whiteboard	• Trainer • All participants
Preparation phase	45 min	• Individual work: Crafting a pitch for a select audience	• To define and analyze the target audience • to define the core message • to apply relevant principles (based on the intro lecture) • to draft a pitch for a select audience • to get feedback on the process from the instructor (doc sharing)	• Individual work	• laptops	• Trainer • All participants
Practice and Feedback phase	45 min	• Practicing own pitch in front of the whole class (first 8 participants)	• to practice the pitch in front of whole course group • to get feedback from whole course group and instructor(s)	• Exercise	• laptops	• Trainer • All participants
Practice and	45 min	• Practicing own pitch in front of the whole class (last 8 participants)	• to practice the pitch in front of whole course group	• Exercise	• laptops	• Trainer • All participants

			• to get feedback from whole course group and instructor(s)			
Closing phase	15 min	• Q&A • Course evaluation	• to collect information for course improvement	• Individual work • Plenary discussion	• Evaluation forms	• Trainer • All participants

Post-course phase

Course documentation to be sent to participants (photo protocol and presentations). Lessons learned, results of evaluation Transfer evaluation

1 Nr. | Module

VI Publication and Promotion

2 Nr. | Course Title

VI – 4 Academic Writing

3 Course Format

Classroom or online training

4 Key Data

Scope: 8 working units á 45 min. each (15 hours)
ECTS: 1 (recommended)

5 Learning Outcomes

- Be able to produce academic texts
- Master academic publishing language
- Gain an understanding about the writing and publishing process
- Learn how to take control of your writing process

6 Overall Contents

- Insights into the writing process
- Working with writing techniques
- Text planning and refinement (message and narrative, etc.)
- Developing clear, logically structured, consistent texts (the common thread)
- Style and structure of texts (title, abstracts, paragraphs, full papers etc.)
- Academic vocabulary
- Helpful internet tools
- Considering the evaluator perspective/insights into the review process
- Writing in English: special features of English academic writing

7 Overview of Teaching Methods

- Input
- Group work, pair work
- Individual writing (e.g. “Shut up and write” session)
- Preparation: participants´ draft of a journal article, dissertation, etc.)
- Individual feedback and coaching
- Practical exercises

8 Target Group

Qualification phase

- Recommended: PhD students in the 2nd phase/ at the end of their qualification phase

Prior knowledge or experience

- PhD students with little or no previous knowledge
- Participants with previous experience can deepen their knowledge

9 Tips for implementation | Adjustments

Group Size
For lager groups than 16 participants allow for up to 5 persons in the exercises. Consequently, the time for group work needs to be extended accordingly.

10 Course material | Reading list

CARGILL, M. & O'CONNOR, P. (2008). *Writing Scientific Research Articles: Strategy and Steps.* Wiley-Blackwell.

HAAS, s. (2009). *Collaboratively constructing a model of the writing process.* ELTED, vol. 12.

NYGAARD, L. P. (2009) *Writing for Scholars*: *A Practical Guide to Making Sense and Being Heard.* Universitetsforlaget.

Course Outline for Trainers

Pre-course Phase |Preparation List

Instructions for participants: Bring a draft of at least one writing product you are currently working on (e.g., an article, a chapter, a dissertation). Also, bring similar texts to use as models for your own writing (e.g., journal articles on a topic similar to yours, successful dissertations from your field).

Day 1

Course Phase	Time	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Input phase	15-30 min	• Course aims & Agenda • introductions	• to create a good working atmosphere • to get to know each other • to introduce the course	• Plenary discussion		• Trainer • All participants
Input phase	45 min	• Common & opaque writing issues (coherence, cohesion, readability) • Writing in English: useful phrases – Manchester Academic Phrasebank • Conceptual Template • Analysis of (own) model texts	• to identify and define difficult writing issues • to provide a useful perspective and a writing technique • to introduce relevant resources • to learn from model texts	• Interactive presentation	• PPT Presentation • Flip chart or Whiteboard	• Trainer • All participants
Shut up & Write phase	45 min	• Individual work on own writing product • Using (own) model texts • Using knowledge & insights gained in the Input phase	• to make concrete progress on own writing product • to put in practice knowledge & insights gained in the Input phase	• Focused individual work • („Shut up & Write“ session)	• own drafts and model texts • own laptops	• Trainer • All participants
Feedback phase	75-90 min	• Feedback on own writing product • Focused Q&A • Clarification of presented concepts	• to assist participants with concrete progress on their own writing product	• Group work and feedback • Individual feedback and coaching	• PPT Presentation • Flip chart, or Whiteboard	• Trainer • All participants

			• to identify and follow up on issues that emergent from the S&W session	• Plenary discussion		
Closing Phase	15 min	• Q&A • Day 1 evaluation	• to clarify Day 1 concepts • to collect information for course improvement	• Individual work • Plenary discussion	• Evaluation forms	• Trainer • All participants

Day 2

Course Phase	Time	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Input phase	45 min	• Text planning & refinement • Developing clear, logically structured, coherent texts (message -> global structure -> local structure -> local language) • "Two papers are better than one"	• to take a step back from the text to the research content • to identify a coherent message for the writing product • to plan the writing product well • to link Day 2 to Day 1	• Interactive presentation	• PPT Presentation • Flip chart or Whiteboard	• Trainer • All participants
Input phase	45 min	• "Collaboratively co-constructing a model of the writing process" based on S. Haas (2009)	• to present a helpful writing model • to help participants take control of their own writing	• Interactive presentation	• PPT Presentation • Article handouts • Flip chart or Whiteboard	• Trainer • All participants
Shut up & Write phase	45 min	• Individual work on own writing product • Using knowledge & insights gained in the Input phase	• to make concrete progress on own writing product • to put in practice knowledge & insights gained in the Input phase	• Focused individual work • („Shut up & Write" session)	• own drafts and model texts • own laptops	• Trainer • All participants
Feedback phase	45 min	• Feedback on own writing product • Focused Q&A • Clarification of presented concepts	• to assist participants with concrete progress on their own writing product	• Group work and feedback	• PPT Presentation • Flip chart, or Whiteboard	• Trainer • All participants

			• to identify and follow up on issues that emergent from the S&W session	• Individual feedback and coaching • Plenary discussion		
Closing phase	15 min	• Whole course Q&A • Day 2 evaluation • Whole course evaluation	• clarifying course contents • collecting information for course improvement	• Individual work • Plenary discussion	• Evaluation forms	• Trainer • All participants

Post-course phase

Course documentation to be sent to participants (photo protocol and presentations). Lessons learned, results of evaluation Transfer evaluation

Module VII: Innovation and Entrepreneurial Thinking

1 Nr. | Module

VII Innovation and Entrepreneurial Thinking

2 Nr. | Course Title

VII – 1 Innovation and Entrepreneurial Thinking

3 Course Format

In real life / Online teaching + Self study

4 Key Data

Scope: 7 working units à 45 min. each
ECTS: 1.5 (recommended)

5 Starting Point

Our PhD programmes are a main building block for the future of research and research collaborations. A graduated PhD student will be an ambassador for the research and methods within their field – whether they continue in academia or change paths to private or public entities.
The topic of Innovation in a research setting aims to answer the question: How do we translate excellent and groundbreaking research results, into radically improved practices?
This PhD course aims at enabling students to understand and work with the link between research and practice, to better enable them to establish the link between research and practice through an entrepreneurial mindset.
This mindset will be of increased importance in our knowledge-based economy – both for researchers in academia aiming to get impact from research, and for researchers in the industry and public sector aiming to use scientific research to develop their practices.
Preparatory work for students: Create your "Family dinner pitch"!
Imagine that you are at a family dinner, and your aunt/uncle or distant relative asks you "so, what is your PhD work all about?" You know that he/she doesn't have the faintest idea about your research area, or anything going on at the university at all. And you know that he/she probably would lose interest if you are talking for more than 2-3 minutes and explain all the intricate details of your work. Some of you might have tried this in real-life quite a few times already – but practice makes perfect.
Exercise: Say out loud (all by yourself, or to your spouse/flat-mate) what you would tell that aunt or uncle, highlighting what the value of your results could be to society - companies, users, organisations or the planet. This shouldn't take more than 1-2 minutes to explain. Do it 2-3 times, and get feedback if you've got the chance to practice with someone you know – your flatmate, girl/boyfriend or family." Do they understand? Do they think it's interesting?

6 Learning Outcomes

- Understand the role and importance of innovation in society and expectations for academia
- Be familiar with the fundamentals of theories on innovation
- Know key aspects of the dominant innovation theories and challenges
- Understand different concepts and types of innovation

7 Overall Contents

- How research adds or can add value to society
- Different modes of knowledge transfer
- Understanding practitioners: How they adopt knowledge
- Introduction to concepts and theories used in innovation and entrepreneurial thinking
- Semantics and theories
- Concept of open innovation
- Types of innovation (e.g., process, service, product, technological, systems-oriented, and strategic innovation)
- Intrapreneurship versus entrepreneurship
- Current state of research problems, industry challenges and trends

8 Overview of Teaching Methods

- Expert input
- Group work
- Self-study

9 Assignments

Each candidate is requested to select a result from his or her own research (an existing or possible future result) as an innovation case.

The student will develop a simple “feasibility note” as well as a “pitch deck” for their innovation case.

10 Form of Assessment | Grading Scale

Assessment is based on a written “Feasibility note” describing the innovation case. This report should contain what problem the innovation case addresses, the solution itself, hypothesis about users and an outline of a potential way to work for or facilitate knowledge transfer.
Students are also asked to hand in a 2-page reflection note (commonly in combination with parallel courses in this module) – where they describe how their perspective on innovation and entrepreneurship changed/developed as a result of this course.
The grading scale used is pass / fail.

11 Target Group

Students having established “research project”

- Recommended: PhD students should have decided on their proposed project (at least 0.5-1 year into the studies, up until completion of the degree)

Prior knowledge or experience

- PhD students with all ranges of experience are eligible
- Students should be curious and willing to learn about innovation linked with research, and interested in the topic
- Researching in collaboration with industry or practitioners is beneficial

12 Tipps for implementation | Adjustments

For larger groups (more than 20 persons) it is recommended to either divide the group or have one group of students jointly work on one research case, instead of working on one case per student.

Course Outline for Trainers

Pre-course Phase |Preparation List

Collect expectations of individual participants, assign preparatory work (family dinner pitch), set up online training room and send out links to participants.

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory Phase	15 min	• Welcome, Agenda • Self-presentation of participants	• Creating a good working atmosphere • Participants get to know each other	• Presentation	• Screen / Projector • (Physical course: Name tags)	• Trainer • All participants
	45 min	• Introductory topic: Innovation from a researcher context and the entrepreneurial mindset (20 min) • Group discussion: What are the challenges and important aspects of research-based innovation? (15 min) • Round-up with class (10 min)	• Introducing the main topic of the course • Start getting participants to reflect and share their thoughts on research-based innovation	• Presentation • Group discussion and class round-up	• Screen / Projector • Online solution with Break-out rooms (e.g. Zoom) – groups of 3-4 students • (Physical course: Classroom with group layout, 3-5 people per group)	• Trainer (s) • All participants • Group discussion: Group of 3-4 students
	15 min	Digital break	For digital course; avoid “screen tiredness”			
	90 min	• Topic lecture: Universities‘ role in knowledge transfer and commercialization: What role does research and researchers play? (45 minutes) • Group discussion: What role does universities and academia play in societal development? Why should we care about innovation/impact? (30 min) • Round-up with class (15 min)	• Dive into the purpose, principles and ethics of contributing to innovation, tackling the question: Should we not just focus on excellent research, rather than the impact of it?	• Presentation • Group discussion and class round-up	• Screen / Projector • Break-out rooms, same groups as before • (Physical course: Group layout)	• Trainer (s) • All participants • Group discussion: Same groups as before

	15 min	Digital break	For digital course; avoid "screen tiredness"			
Working Phase	60 min	• Knowing your users / customers: Who are they? How do they adopt new knowledge? (15 min) • Group discussion: Which group(s) would be the most important users of your results? How do they behave and adopt new knowledge? (30 min) • Summary in class (15 min)	• Understanding different segments of practitioners; industry players, public governance, policy makers, consumers etc • Being able to discuss and make simple hypotheses about practitioners' adoption of research results	• Presentation • Group discussion and class round-up	• Screen / Projector • Break-out rooms, same groups as before • (Physical course: Group layout)	• Trainer (s) • All participants • Group discussion: Same groups as before
	15 min	Digital break	For digital course; avoid "screen tiredness			
Closing Phase	30 min	Reflections: • Summarize the day • Get feedback from students on course content and form Students do 5-minute individual reflection: What have I learned? Did I have any "eureka" moments? What was the most provocative?	• Help students summarize and evaluate what they've learned Give students time to process and save learnings	• Presentation • Individual work	• Presentation Students use digital or physical notepad to write down impressions	• Trainer All participants
	30 min	Teaching round-up: • Reminder and input to the "feasibility note" • Get feedback from students on course content and form • Students do 5-minute individual reflection • Q&A Assessment	• Help students summarize and evaluate what they've learned • Give students time to process and save learnings	• Individual reflection	• Presentation • Students use digital or physical notepad to write down impressions	• Trainer • All participants

Post-course phase

Feasibility note and reflection to be completed until 2 weeks after the course. To be uploaded on learning platform.

1 Nr. | Module

VII Innovation and Entrepreneurial Thinking

2 Nr. | Course Title

VII – 2 Innovation Processes

3 Course Format

In real life / Online teaching + Self study

4 Key Data

Scope: 7 working units à 45 min. each
ECTS: 1.5 (recommended)

5 Starting Point

Our PhD programmes are a main building block for the future of research and research collaborations. A graduated PhD student will be an ambassador for the research and methods within their field – whether they continue in academia or change paths to private or public entities.
The topic of Innovation in a research setting aims to answer the question: How do we translate excellent and groundbreaking research results, into radically improved practices?
This PhD course aims at enabling students to understand and work with the link between research and practice, to better enable them to establish the link between research and practice through an entrepreneurial mindset.
This mindset will be of increased importance in our knowledge-based economy – both for researchers in academia aiming to get impact from research, and for researchers in the industry and public sector aiming to use scientific research to develop their practices.

6 Learning Outcomes

- Participants will develop a sense of why and how they can work to transfer research results into new practices – through commercialisation, licensing, collaboration, and informal knowledge transfer
- They will get tools to understand the "business aspect" of their research results and communicate with non-scientific decision makers (such as investors, managers, policy makers).
- Acquire knowledge on the innovation process
- Develop ability to differentiate between ideas, inventions, and value proposals
- Be familiar with different types of business models and how to apply them
- Know the traditional new product development process and its elements
- Understand the principles of fuzzy front end at a product's pre-development stage

7 Overall Contents

- How research adds or can add value to society
- Different modes of knowledge transfer
- Understanding practitioners: How they adopt knowledge
- Business models as a tool to develop an entrepreneurial project, and as a way to understand potential

users/customers
- Development of a “pitch deck” for investors, managers, partners, users or customers
- Innovation as process: steps from idea to impact (through development, implementation and growth); technology push vs. market pull
- Innovation management: ideas, invention and value proposals
- Business models in the consumer market, B2B and digital business models
- New product development as process: idea generation, concept testing, business analysis, product development, market testing and commercialisation
- Fuzzy front end at a product’s pre-development stage

8 Overview of Teaching Methods

- Expert input
- Case studies
- Group exercises and discussions
- Self-study

9 Assignments

Each candidate is requested to select a result from his or her own research (an existing or possible future result) as an innovation case.
The student will develop a “feasibility note” for their innovation case.

10 Form of Assessment | Grading Scale

Assessment is based on a written “Feasibility note” describing the innovation case. This report should contain what problem the innovation case addresses, the solution itself, hypotheses about users and an outline of a potential way to work for or facilitate knowledge transfer and alternative business models and use of formal/informal channels.

The grading scale used is pass / fail.

11 Target Group

Students having established “research project”
- Recommended: PhD students should have decided on their proposed project (at least 0.5-1 year into the studies, up until completion of the degree)

Prior knowledge or experience
- PhD students with all ranges of experience are eligible
- Students should be curious and willing to learn about innovation linked with research, and interested in the topic
- Researching in collaboration with industry or practitioners is beneficial

12 Tipps for implementation | Adjustments

For larger groups (more than 20 persons) it is recommended to either divide the group or have one group of students jointly work on one research case, instead of working on one case per student.

Course Outline for Trainers

Pre-course Phase |Preparation List

Collect expectations of individual participants, set up online training room and send out links to participants.

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory Phase	15 min	• Welcome, Agenda • Self-presentation of participants	• Creating a good working atmosphere • Participants get to know each other	• Presentation	• Screen / Projector • (Physical course: Name tags)	• Trainer • All participants
	45 min	• Introductory topic: Innovation process (20 min) • Group discussion: What are the challenges and important aspects of the innovation process? (15 min) • Round-up with class (10 min)	• Introducing the main topic of the course • Start getting participants to reflect and share their thoughts on the innovation process	• Presentation • Group discussion and class round-up	• Screen / Projector • Online solution with Break-out rooms (e.g. Zoom) – groups of 3-4 students • (Physical course: Classroom with group layout, 3-5 people per group)	• Trainer (s) • All participants • Group discussion: Group of 3-4 students
	15 min	Digital break	For digital course; avoid “screen tiredness”			
	90 min	Business models, sustainability and the Business Model Canvas: • What is a business model? • The Osterwalder business model canvas – walk-through with 1 project from each team Sustainable business models	• Students should understand the concept and main aspects of a business model • Students should be able to discuss a business opportunity using the Business Model Canvas • Students learn some aspects of sustainability	• Presentation • Group discussions	• Screen / Projector • Break-out rooms, same groups as before • (Physical course: Group layout)	• Guest lecturer (law) • All participants

			in new business opportunities			
	15 min	Digital break	For digital course; avoid “screen tiredness”			
Working Phase	60 min	User/ Customer orientation: Design thinking and “Jobs to be done”	• Students should be able to better understand the users perspectives. • Students should learn how to apply the design thinking methodology.	• Presentation • Group discussions	• Screen / Projector • Break-out rooms, same groups as before • (Physical course: Group layout)	• All participants
	15 min	Digital break	For digital course; avoid “screen tiredness”			
	60 min	Knowledge transfer: How could we get our results into the hands of practitioners to make a change?	• Students should learn what channels can be used to getting touch with potential users. • Reflect on use of formal and informal channels.	• Presentation • Individual exercise	• Screen / Projector	• All participants
	15 min	Digital break	For digital course; avoid “screen tiredness”			
Closing Phase	30 min	Reflections: • Summarize the day • Get feedback from students on course content and form Students do 5-minute individual reflection: What have I learned? Did I have any “eureka” moments? What was the most provocative?	• Help students summarize and evaluate what they’ve learned Give students time to process and save learnings	• Presentation • Individual work	• Presentation Students use digital or physical notepad to write down impressions	• Trainer All participants
	30 min	Teaching round-up: • Reminder and input to the “feasibility note”	• Help students summarize and evaluate what they’ve learned • Give students time to process and save learnings	• Individual reflection	• Presentation • Students use digital or physical notepad to write down impressions	• Trainer • All participants

		• Get feedback from students on course content and form • Students do 5-minute individual reflection • Q&A Assessment				

Post-course phase

Feasibility note to be handed in until 2 weeks after the course. To be uploaded on learning platform.

1 Nr. | Module

VII Innovation and Entrepreneurial Thinking

2 Nr. | Course Title

VII – 3 Research-based Innovation

3 Course Format

In real life / Online teaching + Self study

4 Key Data

Scope: 7 working units à 45 min. each
ECTS: 1.5 (recommended)

5 Starting Point

Our PhD programmes are a main building block for the future of research and research collaborations. A graduated PhD student will be an ambassador for the research and methods within their field – whether they continue in academia, or change paths to private or public entities.
The topic of Innovation in a research setting aims to answer the question: How do we translate excellent and groundbreaking research results, into radically improved practices?
This PhD course aims at enabling students to understand and work with the link between research and practice, to better enable them to establish the link between research and practice through an entrepreneurial mindset.
This mindset will be of increased importance in our knowledge-based economy – both for researchers in academia aiming to get impact from research, and for researchers in the industry and public sector aiming to use scientific research to develop their practices.

6 Learning Outcomes

- Know how to identify the innovation potential in one's own research
- Learn how to generate and identify innovation ideas
- Learn how to refine innovation ideas from research using available methods such as design sprint or rapid prototyping
- Increase awareness of the alternative pathways from research to impact
- Increase awareness and be familiar with key aspects of alternative mechanisms for technology transfer

7 Overall Contents

- Identifying the innovation potential within one's own research
- Idea generation and assessment: creativity techniques and design thinking
- Refining innovation ideas: methods (e.g. design sprint, rapid prototyping)
- Alternative pathways from research to impact: continued research, transfer to industry, start-up
- Identifying opportunities and defining value propositions: alternative mechanisms for technology transfer

8 Overview of Teaching Methods

- Expert input
- Case studies
- Exercises in methods of idea generation and identification
- Group presentations

9 Assignments

Each candidate is requested to select a result from his or her own research (an existing or possible future result) as an innovation case.
The student will develop a simple “feasibility note” and “pitch deck” for their innovation case.

10 Form of Assessment | Grading Scale

Assessment is based on a written “Feasibility note” describing the innovation case. This report should contain what problem the innovation case addresses, the solution itself, the proposed value of the innovation and the role of the universities.
The grading scale used is pass / fail.

11 Target Group

Students having established “research project”

- Recommended: PhD students should have decided on their proposed project (at least 0.5-1 year into the studies, up until completion of the degree)

Prior knowledge or experience

- PhD students with all ranges of experience are eligible
- Students should be curious and willing to learn about innovation linked with research, and interested in the topic
- Researching in collaboration with industry or practitioners is beneficial

12 Tipps for implementation | Adjustments

For larger groups (more than 20 persons) it is recommended to either divide the group or have one group of students jointly work on one research case, instead of working on one case per student.

Course Outline for Trainers

Pre-course Phase |Preparation List

Collect expectations of individual participants, set up online training room and send out links to participants.

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory Phase	15 min	• Welcome, Agenda • Self-presentation of participants	• Creating a good working atmosphere • Participants get to know each other	• Presentation	• Screen / Projector • (Physical course: Name tags)	• Trainer • All participants
	45 min	• Introductory topic: Innovation from a researcher context and the entrepreneurial mindset (20 min) • Group discussion: What are the challenges and important aspects of research-based innovation? (15 min) • Round-up with class (10 min)	• Introducing the main topic of the course • Start getting participants to reflect and share their thoughts on research-based innovation	• Presentation • Group discussion and class round-up	• Screen / Projector • Online solution with Break-out rooms (e.g. Zoom) – groups of 3-4 students • (Physical course: Classroom with group layout, 3-5 people per group)	• Trainer (s) • All participants • Group discussion: Group of 3-4 students
	15 min	Digital break	For digital course; avoid “screen tiredness”			
Working Phase	45 min	• Topic: Value creation: What value could my possible research results give to society / users / customers? (15 minutes) • Individual work: What is the issue/problem that MY	• Deep dive into the potential impacts of research, using each students’ own research project as a case • Develop the ability to explain research	• Presentation • Group discussion and class round-up	• Screen / Projector • Break-out rooms, same groups as before • (Physical course: Group layout)	• Trainer (s) • All participants • Group discussion: Same groups as before

		research aims to tackle? What could be the solution from my research? Create 2 slides – problem and solution. (15 minutes) • Group presentations: Present your problem and solution to your group (15 minutes)	contribution to practitioners, in a "non-scientific" way. • Group work enables a broader understanding through working with several cases			
	15 min	Digital break	For digital course; avoid "screen tiredness"			
	60 min	Universities` role in knowledge transfer and commercialization: What role does research and researchers play?	• Get familiar with different forms of universities Technology transfer • Discuss why and how the universities should contribute to the innovation.	• Presentation • Group discussion	• Screen / Projector • Break-out rooms, same groups as before • (Physical course: Group layout)	• All participants
	15 min	Digital break	• For digital course; avoid "screen tiredness"			
	105 min	Pitch workshop • Developing a (4-minute) pitch-deck to explain the potential impact/ Innovation from your research (45 min) Peer-to-peer pitch rehearsal in groups with feedback from fellow students – how would I present my pitch? (60 min)	• Students should be able to "pitch" their research project to non-scientists: describing the need, the solution, the customer/user and a suggested mode of transferring their research knowledge	• Individual work • Peer-to-peer learning	• Break-out rooms, same groups as before • (Physical course: Separate rooms or spaces for each group. Alternatively: big room with group layout)	• All participants
	15 min	Digital break	• For digital course; avoid "screen tiredness"			
	30 min	Class pitching	• Students learn how to use a "Pitch-and-	• Peer-to-peer learning	• A "random" generator – picking out 1	• Trainer • All participants

			feedback loop" as a way to approach and get input from potential stakeholders: investors, management, partners, customers, users.	• Feedback from experts	random pitch from each group • Presentation	
Closing Phase	30 min	Reflections: • Summarize the day • Get feedback from students on course content and form Students do 5-minute individual reflection: What have I learned? Did I have any "eureka" moments? What was the most provocative?	• Help students summarize and evaluate what they've learned • Give students time to process and save learnings	• Presentation • Individual work	• Presentation • Students use digital or physical notepad to write down impressions	• Trainer • All participants
	30 min	Teaching round-up: • Reminder and input to the "feasibility note" • Get feedback from students on course content and form • Students do 5-minute individual reflection • Q&A Assessment	• Help students summarize and evaluate what they've learned • Give students time to process and save learnings	• Individual reflection	• Presentation • Students use digital or physical notepad to write down impressions	• Trainer • All participants

Post-course phase

Feasibility note to be handed in until 2 weeks after the course. To be uploaded on learning platform.

1 Nr. | Module

VII Innovation and Entrepreneurial Thinking

2 Nr. | Course Title

VII – 4 Intellectual property rights

3 Course Format

In real life / Online teaching + Self study

4 Key Data

Scope: 7 working units á 45 min. each
ECTS: 1.5 (recommended)

5 Starting Point

Our PhD programmes are a main building block for the future of research and research collaborations. A graduated PhD student will be an ambassador for the research and methods within their field – whether they continue in academia or change paths to private or public entities.
The topic of Innovation in a research setting aims to answer the question: How do we translate excellent and groundbreaking research results, into radically improved practices?
This PhD course aims at enabling students to understand and work with the link between research and practice, to better enable them to establish the link between research and practice through an entrepreneurial mindset.
This mindset will be of increased importance in our knowledge-based economy – both for researchers in academia aiming to get impact from research, and for researchers in the industry and public sector aiming to use scientific research to develop their practices.

6 Learning Outcomes

- Acquire ability to distinguish between knowledge, intellectual asset and forms of intellectual property
- Know alternative mechanisms for protection of intellectual property
- Be familiar with key aspects of patenting
- Know specifics of intellectual property in academia
- Build awareness of research contracts' impact on control of intellectual property

7 Overall Contents

- Intellectual Property (IP) and Intellectual Property Rights (IPR) and their strategic importance for research projects
- Introduction to topic, semantics and motivation
- International framework and legislation
- Types of protection (e.g., patents, copyrights, trademarks)
- Patents: legal requirements, procedure, exploitation
- Intellectual property in academia
- Open-source model
- Intellectual property rights as a strategic element in technology transfer between academia and industry
- The impact of research contract

8 Overview of Teaching Methods

- Expert input
- Case studies
- Individual and group exercises
- Group discussions
- Web-based introductory content

9 Assignments

Each candidate is requested to select a result from his or her own research (an existing or possible future result) as an innovation case.
The student will develop a simple “feasibility note” for their innovation case.

10 Form of Assessment | Grading Scale

An assessment report is based on a written “Feasibility note” describing your possible innovation case. This report should contain IPR policy and practice at your university and national law, including support and funding opportunities.
The grading scale used is pass / fail.

11 Target Group

Students having established “research project”

- Recommended: PhD students should have decided on their proposed project (at least 0.5-1 year into the studies, up until completion of the degree)

Prior knowledge or experience

- PhD students with all ranges of experience are eligible
- Students should be curious and willing to learn about innovation linked with research, and interested in the topic
- Researching in collaboration with industry or practitioners is beneficial

12 Tipps for implementation | Adjustments

For larger groups (more than 20 persons) it is recommended to either divide the group or have one group of students jointly work on one research case, instead of working on one case per student.

Course Outline for Trainers

Pre-course Phase |Preparation List

Collect expectations of individual participants, set up online training room and send out links to participants.

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory Phase	15 min	• Welcome, Agenda • Self-presentation of participants	• Creating a good working atmosphere • Participants get to know each other	• Presentation	• Screen / Projector • (Physical course: Name tags)	• Trainer • All participants
	45 min	• Introductory topic: The rights to the results from research – Open-Source vs patents (20 min) • Group discussion: What are the challenges and important aspects of ownership of research results? (15 min) • Round-up with class (10 min)	• Introducing the main topic of the course Start getting participants to reflect and share their thoughts on research-based innovation	• Presentation Group discussion and class round-up	• Screen / Projector • Online solution with Break-out rooms (e.g. Zoom) – groups of 3-4 students • (Physical course: Classroom with group layout, 3-5 people per group)	• Trainer (s) • All participants • Group discussion: Group of 3-4 students
	15 min	Digital break	For digital course; avoid “screen tiredness”			
Working Phase	90 min	IP and IPR • Basics of IP and IPR • Strategic use of IP and IPR in research and commercialization	• Students should know the basics of IP and IPR as a tool for researchers • Students should be able to discuss the opportunities and potential pitfalls related to IP and IPR in research projects	• Presentation • Group discussions	• Screen / Projector • Break-out rooms, same groups as before • (Physical course: Group layout)	• Guest lecturer (law) • All participants

	15 min	Digital break	For digital course; avoid “screen tiredness”			
	75 min	Early phase funding: • Mechanism for verification and proof of concept • Bridging the Valley of Death	• Help students understand and reflect on mechanisms that may hinder innovation based on your research ideas.	• Presentation • Individual work	• Screen / Projector	
	15 min	Digital break	For digital course; avoid “screen tiredness”			
Closing Phase	30 min	Reflections: • Summarize the day • Get feedback from students on course content and form • Students do 5-minute individual reflection: What have I learned? Did I have any “eureka” moments? What was the most provocative?	• Help students summarize and evaluate what they’ve learned • Give students time to process and save learnings	• Presentation • Individual work	• Presentation • Students use digital or physical notepad to write down impressions	• Trainer • All participants
	30 min	Teaching round-up: • Reminder and input to the “feasibility note” • Get feedback from students on course content and form • Students do 5-minute individual reflection • Q&A Assessment	• Help students summarize and evaluate what they’ve learned • Give students time to process and save learnings	• Individual reflection	• Presentation • Students use digital or physical notepad to write down impressions	• Trainer • All participants

Post-course phase

Feasibility note to be handed in until 2 weeks after the course. To be uploaded on learning platform.

1 Nr. | Module

VII Innovation and Entrepreneurial Thinking

2 Nr. | Course Title

VII – 5 Entrepreneurial Thinking for Researchers

3 Course Format

Online teaching + Self study

4 Key Data

Scope: 20 working units á 45 min. each (15 hours)
ECTS: 0.5 (recommended)

5 Starting Point

Our PhD programmes are a main building block for the future of research as well as for the future of knowledge transfer to society. A graduated PhD student will face a range of choices of how to leverage his/her research findings beyond publishing. There are many ways, such as doing more research (for example as post-doctoral researcher), applying one's expertise in an existing company, and/or setting up a new venture.
The topic of entrepreneurship in a research setting aims to answer the question: How could we translate excellent research results into innovative business ventures?
This PhD course on "Entrepreneurship" focusses on research-based entrepreneurship.
It aims at raising awareness for the success factors in preparation for setting up a new venture. The learning of the course will arise from students working with a concrete innovation project, while learning from theoretical cornerstones of entrepreneurship as well as practical tools for conceptualizing a business idea. The students will be challenged to come up with a start-up project related to their own research or within the research of their fellow students. The students will work to evolve and create a mini-business plan for the project as a way of active learning from the course. The course will use formats such as key-note speeches, exercises, class discussions, individual reflections and student presentations to give participants an insight into different aspects of the research-based entrepreneurship journey.

Preparatory work for students:

Create your "Family dinner pitch"!
Imagine that you are at a family dinner, and your aunt/uncle or distant relative asks you "so, what is your PhD work all about?" You know that he/she doesn't have the faintest idea about your research area, or anything going on at the university at all. And you know that he/she probably would lose interest if you talked for more than 2-3 minutes and explained all the intricate details of your work. Some students might have tried this in real-life quite a few times already – but practice makes perfect.

Exercise: Say out loud (all by yourself, or to your spouse/flat-mate) what you would tell your aunt or uncle, highlighting what is new and/or different compared to previous studies and what the value of your results could be to society - companies, users, organisations, or the planet. This shouldn't take more than 1-2 minutes. Do it 2-3 times and get feedback if you've got the chance to practice with someone you know – your flatmate, girl/boyfriend or family." Do they understand? Do they think it is interesting?

6 Learning Outcomes

- Participants will develop a sense of how to generate business ideas based on their research.
- They will also be run through a process for assessing an early idea and developing it into a business concept.
- They will get and apply tools to understand the "business aspect" of their research results and communicate with non-scientific decision makers (such as investors).
- They will gain an understanding of challenging aspects when founding a start-up and how to overcome them.
- They will be introduced to the basics of funding and finances in start-up companies, incl. public sources of start-up funding available to academic entrepreneurs.

7 Overall Contents

- Introducing entrepreneurship and business planning (key terminology)
- Challenges entrepreneurs face, and how they can be addressed
- Understanding the target market: How can the market and its potential be assessed
- Understanding the user/customer: the role of Design Thinking
- Presenting business models as a tool to develop an entrepreneurial project, and as a way to understand potential users/customers (incl. the tool Business Model Canvas)
- Clarifying sustainability and giving examples for sustainable business models
- Introducing pitching
- Presenting basic finance and funding for startups (incl. public funding)
- Developing a "pitch deck" for investors, managers, partners, users or customers

8 Overview of Teaching Methods

- Key-note speeches
- Group discussions
- Peer-to-peer feedback exercises
- Individual reflection
- Individual exercises
- Student presentations

9 Assignments

Each candidate is requested to select a result from his or her own research (an existing or possible future result) as a startup project.
During the seminar, each participant will develop a simple and early "mini business plan" as well as a corresponding "pitch deck" for their project.
After the seminar, each participant is asked to individually reflect on their 3-5 key success factors when evaluating an initial business idea.

10 Form of Assessment | Grading Scale

Assessment is based on a pitch presentation describing the startup project in the format of a set of slides (pitch deck). This pitch presentation should contain what problem the project addresses, the solution proposed, an early understanding of customers/users (the target profile), a possible business model (to be tested) and an outline of what it would take to get the solution "out there".
Students are also asked to hand in a 2-page reflection note – where they describe what **they individually** see as their 3-5 key success factors when evaluating an initial business idea.

The grading scale used is pass / fail.

11 Target Group

Students having established “research project”

- Recommended: PhD students should have decided on their proposed project (at least 0,5-1 year into the studies, up until completion of the degree)

Prior knowledge or experience

- PhD students with all ranges of experience are eligible
- Students should be curious and willing to learn about innovation linked with research, and interested in the topic
- Researching in collaboration with industry or practitioners is beneficial

12 Tipps for implementation | Adjustments

1. Ideally, schedule two days with a week in-between, and assign a little task for market research from Day 1 to Day 2
2. <u>If online format:</u>
    a. Have regular breaks (every 60mins),
    b. Allow for extra time during lunch break, to go for a walk (15mins),
    c. (ideally) have a max. of 16 participants to allow for team building and individual learning.
3. Vote for individual pitching (everybody, in breakout rooms) vs voluntary pitches (volunteers, in plenary) at beginning of Day 2 (e.g., tool mentimeter www.menti.com)
4. Have an external – trusted – guest for additional feedback on pitches

Course Outline for Trainers

Pre-course Phase |Preparation List

Collect expectations of individual participants, assign preparatory work (e.g., family dinner pitch), set up online training room and send out links to participants.

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory Phase	60 min	**Welcome, Agenda** • Self-presentation of trainers and participants • relevant experience with/exposure to entrepreneurship and/or business planning? Current plans for life after PhD?	• Creating a good working atmosphere • Participants get to know each other	• Interactive presentation	• Screen / Projector • (Physical course: Name tags)	• Trainer • All participants
	10 min	Digital break	For digital course; avoid “screen tiredness”			
	60 min	**Introducing Entrepreneurship and business planning** • What do we know from research about how it works?	• Introducing the main topic of the course • Start getting participants to reflect and share their thoughts on research-based innovation	• Interactive presentation • Group discussion and class round-up	• Screen / Projector • Online solution with Break-out rooms (e.g. Zoom) – groups of 3-4 students • (Physical course: Classroom with group layout, 3-5 people per group)	• Trainer (s) • All participants • Group discussion: Group of 3-4 students
	10 min	Digital break	For digital course; avoid “screen tiredness”			

	45 min	**Challenges** • What challenges do entrepreneurs face? • How can they be addressed?	• Raising awareness of the problems in- and outside academia with regards to innovation • Fostering problem solving skills	• Interactive presentation • Group discussion and class round-up	• Screen / Projector • Break-out rooms, same groups as before • (Physical course: Group layout)	• Trainer (s) • All participants • Group discussion: Same groups as before
	75 min	Lunch break				
Working phase	60 min	**Know your market** • How could we assess our market and its potential? • How to differentiate from competition?	• Ability to perform a target and field analysis • Develop the ability to explain research contribution to practitioners, in a "non-scientific" way. • Gain a broader understanding through working with several perspectives	• Interactive presentation • Exercise • Reflection • Group discussion and class round-up	• Screen / Projector • Break-out rooms, same groups as before • (Physical course: Group layout)	• Trainer (s) • All participants • Group discussion: Same groups as before
	15 min	Digital break	For digital course; avoid "screen tiredness"			
	45 min	**User/Customer orientation** • Knowing your users / customers: Who are they? • Design Thinking • "Jobs to be done"	• Understanding different segments of practitioners; industry players, public governance, policy makers, consumers etc • Be familiar with design concepts	• Interactive presentation • Group discussion and class round-up	• Screen / Projector • Break-out rooms, same groups as before • (Physical course: Group layout)	• Trainer (s) • All participants • Group discussion: Same groups as before
	5 min	Digital break	For digital course; avoid "screen tiredness			
	30 min	**Pitching - introduction**	• Knowledge about pitching techniques	• Interactive presentation	• Screen / Projector	• Trainer (s) • All participants

		• Introduction to different kind of pitches • Sample pitch presentation	• Ability to give and receive constructive feedback	• Pitch • Plenary discussion		
Closing phase	15 min	**Wrap up and Deliverables** • Assignments to be delivered • Q&A • Summarize the day • Get feedback from students on course content and form	• Help participants summarize and evaluate what they have learned • Give participants time to process and save learnings	• Interactive presentation • Feedback circle	• Presentation • Plenary discussion	• Trainer • All participant(s)

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	5 min	**Welcome and introduction to the day** • Overview of today's agenda	• Give an overview of today's activities	• Interactive presentation	• Screen / Projector	• Trainer
Working phase	60 min	**Funding** • What sources of finance are available for a start-up? • What are the benefits and/or drawbacks? • How to do financial planning	• Participants gain an overview of funding opportunities and can critically judge the (dis-) advantages • Participants know how to conduct a financial plan	• Interactive presentation • Group discussions • Exercise	• Screen / Projector • Break-out rooms, same groups as before • (Physical course: Group layout)	• Trainer • All participants
	5 min	Digital Break	For digital course; avoid "screen tiredness			

	90 min	**Business models, sustainability and the Business Model Canvas**: • What is a business model? • The Osterwalder business model canvas – walk-through with 1 project from each team • Sustainable business models	• Students should understand the concept and main aspects of a business model • Participants should be able to discuss a business opportunity using the Business Model Canvas • Participants learn some aspects of sustainability in new business opportunities	• Interactive presentation • Group discussions	• Screen / Projector • Break-out rooms, same groups as before • (Physical course: Group layout)	• Trainer • All participants
	50 min	Lunch break				
	105 min	**Pitch workshop** • Developing a (4-minute) pitch-deck to explain the potential impact/ Innovation from your research • Peer-to-peer pitch rehearsal in groups with feedback from fellow students – how would I present my pitch?	• Participants should be able to "pitch" their research project to non-scientists: describing the need, the solution, the customer/user and a suggested mode of transferring their research knowledge	• Individual work • Peer-to-peer learning	• Break-out rooms, same groups as before • (Physical course: Separate rooms or spaces for each group. Alternatively: big room with group layout)	• All participants
	15 min	Digital break	For digital course; avoid "screen tiredness			
	40 min	**Class pitching** • Presentation of group pitches • Feedback round on pitches	• Participants learn how to use a "Pitch-and-feedback loop" as a way to approach and get input from potential stakeholders: investors, management, partners, customers, users.	• Peer-to-peer learning • Feedback from experts	• A "random" generator – picking out 1 random pitch from each group • Interactive presentation	• Trainer • All participants

Closing phase	20 min	**Teaching round-up** • Reminder and input to the written assignment • Get feedback from students on course content and form • Students do 5-minute individual reflection	• Help participants summarize and evaluate what they have learned • Give participants time to process and save learnings	• Individual reflection	• Interactive presentation • Participants use digital or physical notepad to write down impressions	• Trainer • All participants

Post-course phase

Reflection to be handed in until 2 weeks after the course. To be uploaded on learning platform.

Module VIII: Teaching Methods

1 Nr. | Module

VIII – Teaching methods

2 Nr. | Course Title

VIII – I: Teaching and learning processes

3 Course Format

The course will be taught as a classroom teaching.

4 Key Data

Scope (class hours): 20 working units á 45 min.
ECTS: 2 (recommended).

5 Learning Outcomes

- Know how to apply activating teaching and learning methods to create study-friendly environments
- Be familiar with teaching and learning processes
- Possess knowledge of different planning instruments
- Know how to structure and select content
- Know how to apply planning instruments
- Possess knowledge of a range of interactive, student-centred teaching and learning methods

6 Overall Contents

- Essential aspects of course preparation (offline)
- Essential aspects of course preparation (flipped classroom)
- Fundamentals of good teaching and learning practices
- Integrating the learner's perspective
- Content selection and the role of learning objectives
- Typical planning instruments
- Essential aspects of course implementation
- Activating teaching and learning methods

7 Overview of Teaching Methods

- Input
- Group work and presentations
- Videos
- Hands-on planning of participants' examples
- Automated response systems (ARS)
- Online learning platform
- Exchange of experiences

8 Target Group

Qualification phase

- Recommended: PhD students at the beginning of their qualification phase

Prior knowledge or experience
PhD students with little or no previous knowledge .

9 Tips for implementation | Adjustments

Group Size
For larger groups than 16 participants allow for up to 5 persons in the exercises. Consequently, the time for group work needs to be extended accordingly.

10 Course materials / reading list

Slides and other material will be distributed at the beginning of and during the course.

Recommended literature:

https://www.johnbiggs.com.au/academic/constructive-alignment/
https://oer.gsu.edu/designnow/part/course-planning-syllabus/

https://www.valamis.com/hub/learning-outcomes
https://www.fractuslearning.com/blooms-taxonomy-verbs-free-chart/

Course Outline for Trainers

Pre-course Phase |Preparation List

- Preparing course structure
- Preparing course contents, methods & materials
- Conducting survey on course expectations of participants; accordingly, adaptations to the course (if applicable)
- Course organisation (registration of participants, room booking, catering, conference tool etc.)
- Preparing assignment: Analysis of show case – pro's and con's of the method chosen, possible improvements

Break times: 60 min lunch break, 2x15 min coffee breaks

Day 1

Course Phase	Duration	Contents	Objectives	Teaching Methods	Media | Material	Active participants
Introductory phase	30 min	**Introduction** • Welcome • Agenda • Self-presentation of trainer • Self-presentation and expectations of participants • Introduction to workshop objectives & methods	• Participants get to know what the course will be about and how it will be implemented • Trainer and participants get to know each other • Creating a constructive and positive working atmosphere	• Presentation • Partner Interviews	• Power Point slides • Flipchart	• Trainer • All participants
Working phase 1	50 min	**Getting Started: Participants' prior experiences of the course subject and most important questions to**	• Essential aspects of course preparation (offline)	• single presentation of assignment results • feedback and discussion	• from pre-course upload at online	• Trainer All participants

		• Participants' results of preparing assignment			learning platform: participants solutions	
	15 min	**Coffee Break**	Time to reflect, exchange and discuss questions and ideas, network with other participants, browse book table HAVE A BREAK!			
Working phase 2	90 min	**Overview of …** • Essential Aspects of Course Preparation • Fundamentals of good teaching and learning practices • How to Integrate the learner's perspective	• Be familiar with teaching and learning processes	• Presentation • Q & A's • exchange of experiences • Discussion and Conclusions for own course design	• via slides • Automated response systems (ARS)	• Trainer All participants
	60 min	**Lunch Break**	See break above			
Working phase 3	90 min	**Learning Goals, Content Selection and Planning Instruments** • Content selection • the role of learning objectives • Typical planning instruments	• Know how to structure and select content • Possess knowledge of different planning instruments	• Group work (3 groups with 3 different assignments for 2 working phases, supported by supplied texts, videos and surveys of • (1) learning objectives, (2) content selection and (3) planning instruments	• Handouts, • videos, • tables • surveys	• Trainer All participants
	15 min	**Coffee Break**	See break above			

Working phase 4	70 min	**Integration of Knowledge gained in Prior Working Phases**	• Know how to apply planning instruments	• Group presentations • Questions, feedback, discussion, transfer to daily teaching practice/routines	Participants' presentation media (slides, flipcharts)	• Trainer All participants
Working phase 5	30 min	**Closure of day 1** • Participants' reflection on their individual learning progress • feedback for day 1 **Outlook on day 2**	• rounding off day 1 • feedback for trainers • preparing and motivating for day 2	• one minute paper to be filled in by participants: • most important lesson learned today, • answering open questions and • collecting participants' interests for day 2	• handout	• Trainer • All participants

Day 2

Course Phase	Duration	Contents	Objectives	Teaching Methods	Media | Material	
Working phase 6	30 min	**Welcome and agenda** • Getting started, welcome and agenda • Wow of the day from day one • Questions risen up between the 2 course days	• Warming up • Repetition of day 1 • Picking up the knot • Creating a good working atmosphere	• talk about results of one minute paper • presentation of time table • short contribution by each participant • plenary discussion	• compilation of all answers of one minute paper of day 1 • slide with agenda	• Trainer • All participants
Working phase 7	60 min	**Activating teaching and learning methods I** • Participants present their prior used activating	• Possess and enlarge knowledge of a range of interactive, student-centred teaching and learning methods	• Exchange of experiences • Input • Presentation	• videos • PP slides	• Trainer • All participants

		teaching and learning methods • Selection of further new activating teaching and learning methods		• Moderated creative group discussion	• Collection with flash cards	
	15 min	**Coffee break**	See prior breaks			
Working phase 8	90 min	**Activating teaching and learning methods II** • Participants select a planning scheme and plan course design using and integrating activating teaching and learning methods	• Know how to apply activating teaching and learning methods to create study-friendly environments	• Group work hands-on with presentation of results (their course design and syllabus) • Feedback, discussion, exchange of experiences	• Participants' presentation slides or flip charts (for the course syllabus)	• Trainer • All participants
	60 min	**Lunch Break**	See prior breaks			
Working phase 9	90 min	**Essential aspects of course implementation**	• Be familiar with teaching and learning processes and apply all relevant principles • Participants have developed at least one example of a course plan • Participants know several possibilities how to structure and design active teaching and learning courses	• Group work hands-on with supportive material • Interactive group presentation of results and their open questions • Moderated discussion	• Assignment • handouts • videos	• Trainer • All participants

	15 min	**Coffee Break**	See prior breaks			
	55 min	**Integration and Transfer to participants' daily teaching environment and routine** • Repetition, • Sum up, • Documentation	• Know how to apply all instruments and methods of this course	Plenary session with input and documentation • Go through all phases of this course, • and repeat all assignments and their results as well as presented methods and instruments • survey of all strategies and tips gathered during these 2 days	• slides with agenda • different assign-ments • materials of the 2 days • document-tation via flip charts/ flash cards	• Trainer • All participants
Closing phase	45 min	**Closure** • Q&A about the presented topics and feedbacks collections • Course evaluation • Outlook	• Quality assurance • Participants reflect on their learning outcomes	• Discussion • Feedback circle („flashlight") • Online evaluation	• Online questionnaire	• All Participants • Trainer

Post-course Phase

Course documentation to be sent to participants (photo protocol and presentations). Lessons learned, results of evaluation Transfer evaluation

1 Nr. | Module

VIII Teaching Methods

2 Nr. | Course Title

VIII-2 Project-based Teaching and Learning

3 Course Format

Blended Learning Format: Class hours, self-directed learning phase between course days

4 Key Data

Scope (working units in class á 45 min.): 20; ECTS points: 2

- Workshop day 1: 9.00 - 17.00
- Two to three weeks between workshops: Design of an own PBL scenario
- Workshop day 2: 9.00 – 13.00

5 Learning Outcomes

- Possess knowledge of fundamentals of project-based teaching and learning in Higher Education
- Be able to select, lead and complete student projects according to learning objectives
- Know how to acquire the tools and resources to handle challenges and difficulties in project-based teaching and learning

6 Overall Contents

- Fundamentals of project-based teaching and learning in Higher Education
- Problem-based vs. project-based learning
- Advantages, possibilities and challenges of project studies
- Key aspects of planning and preparing project studies
- Methods of project-based teaching and learning
- Introduction to useful project management tools for teachers and students
- Key aspects of project implementation
- Performance assessment of project groups and project evaluation

7 Overview of Teaching Methods

- Input
- Group work and interactive presentations
- Hands-on planning of participants' examples
- Discussion
- Exchange of experiences
- Online project tools (e.g. Asana)
- Online collaboration and communication tools

8 Target Group

Qualification phase, prior knowledge or experience

- PhD students with own experience from project work (also outside of teaching)

9 Tipps for implementation | Adjustments

Creating an own PBL concept is the most important learning objective of the course. It has proved very useful to give participants time to think about this at their own pace, to do their own subject-specific research and to refine initial ideas in several steps. For this, the division of the course with a longer working phase between the two workshop days is very much recommended, as it allows for exactly that.

10 Course materials | Reading list

- Kolmos, Anette, Erik De Graaff, and Xiangyun Du. "Diversity of PBL–PBL learning principles and models." Research on PBL practice in engineering education. Brill, 2009. 9-21.
- Lee, Jean S., et al. „Taking a leap of faith: Redefining teaching and learning in higher education through project-based learning." Interdisciplinary Journal of Problem-Based Learning 8.2 (2014): 2. Available online: https://doi.org/10.7771/1541-5015.1426
- Donnelly, Roisin, and Marian Fitzmaurice. "Collaborative project-based learning and problem-based learning in higher education: A consideration of tutor and student roles in learner-focused strategies." Emerging issues in the practice of university learning and teaching (2005): 87-98. Available online: https://arrow.tudublin.ie/cgi/viewcontent.cgi?article=1006&context=ltcbk
- de Los Rios, Ignacio, et al. "Project–based learning in engineering higher education: two decades of teaching competences in real environments." Procedia-Social and Behavioral Sciences 2.2 (2010): 1368-1378. Available online: https://doi.org/10.1016/j.sbspro.2010.03.202

Course Outline for Trainers

Day 1 | Project-based learning

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory Phase	30 min.	**Welcome and Agenda** • Getting started and welcome • Agenda • Overview of expectation survey • Workshop Objectives • Organizational matters (name tags, etc.)	• Creating a good working atmosphere • Participants know the contents and working methods in the course • Participants´ expectations are compared with seminar contents – what we will do and what we won´t do	• Interactive Presentation	• Welcome flipchart • Overview of agenda on wall newspaper • Clustered expectations with concept cards • Flip to collect methods • Open questions memory	• Trainer • All Participants
	50 min.	**Getting started: Experience in project work, areas of expertise and prior knowledge** • brief introduction round 3 Sociograms: • How many semesters of teaching experience do they have? • Experience in project work with students? • Hobbies from A to Z **after that, the trainers introduce themselves**	• Creating a safe container: rules for the course • Participants get to know each other • Create an atmosphere of trust in which open feedback is possible	• Introduction “as long as a match burns” • Inquiry/open question • Sociogram • Moderated discussion/wrap up of the results	• Print outs for the floor (3 sociograms)	• Trainer • All Participants

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
	15 min.	**Coffee break**	• Time to reflect, exchange ideas or network with other participants			
Working Phase 1	60 min.	**Overview of models and formats of PBL** • The basic idea behind PBL • Different formats of PBL and differences between problem-based and project-based learning • Essential components and pedagogical approach to PBL • Teaching practices for PBL, learning environment (content vs. problem oriented, student vs. teacher paced) • Impact of PBL (student engagement and further advantages for students)	• Participants get an overview of and are familiar with definitions of the different approaches • Participants know the process of project-based learning with all its phases	• Input • Think-pair-share • Moderated discussion	• PPT slides	• Trainer • All Participants
	60 min.	**Lunch break**	• Time to reflect, exchange ideas or network with other participants			
Working Phase 2	35 Min.	**Changing roles in PBL** • Reflection of participants' own teaching beliefs • Teacher: from traditional teaching to facilitation • Students: from lectures to self-directed learning and engagement	• Participants reflect on their own role as teachers • Participants are made aware that changes of these roles are not a matter of course, but processes that need to be facilitated and supported	• Think-Pair-Share • Moderated group discussion • Interactive Presentation	• PPT • Different dimensions of teaching on flipchart	• Trainer • All Participants

Working Phase 3	40 Min.	**Challenges for teachers and students and key aspects for a successful PBL scenario** • How to make time/space in courses for projects? • How to support students in projects (in person and online)? • How to assess and evaluate projects? • …	• Participants know what to consider when designing a course or lecture using PBL • Raising sensitivity to core aspects of participants' own PBL concept	• Headstand technique (How do I design a PBL course that goes completely wrong?) • Presentation of results (10 min. per group) and discussion	• Flipcharts	• Trainer • All Participants
Working Phase 4	40 Min.	**Solutions to selected challenges and examples** (picking up the results of the previous unit) • Summary of results and highlighting of the most important or critical aspects • Collecting ideas for solution from the participants from their own project work (also outside of teaching) • Sharing examples from the trainers' experience for some of these aspects	• Participants know what to consider when designing a course or lecture using PBL • Participants get additional ideas for their own PBL concept	• Interactive Presentation • Moderated group discussion	• Flipcharts	• Trainer • All Participants
		Coffee break	Time to reflect, exchange ideas or network with other participants			
	50 min	**The PBL process from the teachers' point of view** • Finding a project, challenging question, or problem	• Participants know the course of a PBL semester from their perspective • Participants get an overview in which phase	• Interactive Presentation • Q&A	• PPT slides	• Trainer

		• Designing learning outcomes and assessment • Building and supporting a learning community • Scaffold student learning • Setting the time frame • Performance assessment of project groups and project evaluation • Tips and ideas to manage, organize and support PBL	they must become active and how their role changes over time • Participants know how to support student project work in a helpful way.			
	40 min	**Participants' own PBL Scenario** • Form peer groups of 3 • Basic elements of the course outline (course description, learning outcomes, instructors, technology requirements, assignments)	• Participants get to know their peer group, with whom they give feedback on the individual concepts as the course progresses • Participants prepare a PBL course template and fill it with first ideas	• Sweets lottery (Drawing lots of participants with the same sweets) • Short overview • Brainstorming	• Sweets (3 of each kind, 1 for every participant) in a box • Flipchart	• All participants • Trainer
Closing Phase	30 min.	**Closure of day 1 and outlook on online phase and day 2** • Assignments for self-directed learning between the workshop days • Participants´ feedback on the day • Outlook on day 2	• Rounding off day 1 by answering open questions • Participants have clarity about assignments for online phase and agenda of day 2 • Trainer gets feedback	• Oral input on feedback • Muddiest Point feedback	• Feedback in tweedback (or similar online feedback tool)	• All participants • Trainer

Assignments for the time between the two workshop days (for a period of 2-3 weeks):

1. Your own PBL scenario: Based on the approach presented and aspects to be considered on the 1st workshop day, participants develop their own PBL course. This includes at least a short course description, the project idea, the learning objectives, a simple weekly plan and first ideas for an assessment procedure. This will be used for further work on the 2nd workshop day.

2. Sharing the concept with the peer group: Everyone thus receives two concepts to read at the same time. These are to be read by the 2nd workshop day so that feedback can then be given in a small group.

Day 2

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory Phase	20 min.	**Welcome and agenda** • Getting started, welcome and agenda • Wow of the day from first course day	• Creating a good working atmosphere	• Overview on flipchart • Outlook on day 2	• Flipchart	• Trainer • All Participants
Working Phase 5	90 min.	**Feedback on participants' own PBL scenario** • Project pitch: everyone presents their PBL idea in 60 seconds • Peer feedback on own PBL drafts • Open questions are discussed in plenary	• Participants have an overview of all PBL projects in the course • Participants receive feedback on their own concept • Participants take further suggestions from the discussions in the other groups and can incorporate them into their own plan	• Pitch presentation • Peer feedback in small groups of three; are asked to come back to plenary with at least two open questions • moderated discussion	• Moderation cards • Metaplan board	• Trainer • All Participants
	20 min	**Coffee break**	Time to reflect, exchange ideas or network with other participants			

	15 Min.	**Rounding off the PBL concept** • Integrate suggestions and proposals for improvement into one's own concept	• Participants have a mostly finished PBL concept with which they can start in the coming semester	• Individual work		• All participants
Working Phase 6	50 min.	**Useful online communication and collaboration tools** Collaboration tools for… • collaborative writing like Etherpad • collaborative drawing tools like Agg.io, • shared knowledge base like DokuWiki • management and communication like Asana, • online whiteboards for mindmapping and brainstorming like Miro	• Participants get to know tools for different phases and tasks • Participants have tried out some of the tools together • Participants can assess the effort and benefit of the tools presented	• Interactive Presentation • Group work • Hands on	• PPT slides • Online tools prepared: • -- Open session links for Etherpad, Agg.io (or similar) • -- Whiteboard set up in Miro (or similar)	• Trainer • All Participants
Closing Phase	30 Min.	**Wrap up and feedback – open questions, how to proceed** • Answering open questions • Participants´ feedback on the course (orally and questionnaire)	• Rounding off the seminar • Participants have clarity about next steps (assessment, organisational aspects, course certificate etc) • Trainers gets feedback on the course	• Input about post-course procedure and assignments • Evaluation landscape • Evaluation questionnaire for participants • Trainer questionnaire	• Evaluation landscape • Online questionnaire • Online course platform	• All Participants
	15 Min.	**Goodbye**	• Rounding off the course			• All

Post-course Phase

upload of materials and photo protocol.

1 Nr. | Module

VIII Teaching Methods

2 Nr. | Course Title

VIII-3 Innovative Teaching Methods

3 Course Format

Blended Learning Format: Class hours, webinar (post course), assessment (in and post course)

4 Key Data

Scope (working units in class á 45 min.): 20; ECTS points: 2

9 Learning Outcomes

The course module aims to provide a foundation for university pedagogics including new innovative teaching methods.
After the finished module the student shall be able to

- explain features of some common in-use pedagogical models and frameworks, such as Intended Learning Outcomes, Constructive alignment, the Bloom and SOLO Knowledge taxonomies, as well as cognitive load theory.
- apply some student active learning designs in their teaching activities, explain the benefits of using such approaches to their students in turn, and be aware of any limitations the approaches may have.
- produce podcasts and videos for use as learning materials or as presentation tools
- find relevant information and scientific papers on teaching and learning in the SET field
- reflect upon the challenges, and efficacies of their own teaching activities

6 Overall Contents

- Fundamentals of innovative teaching and learning practices (face to face and online)
- Activating and student-centred teaching and learning methods (face to face and online)
- Introduction to terminology: e-learning, blended learning, etc.
- Scenarios and systematics of media-based teaching and learning (ICM, MOOCs etc.)
- Use and application of Audience Response Systems (ARS)
- Teaching with videos (systematics, examples)
- Webinars
- Planning and recording screencasts and podcasts
- Individual feedback on own online designs

7 Overview of Teaching Methods

Presentations of pedagogical models and frameworks, are interweaved with examples of how to use digital tools such as podcasts, videos and an ELS. The presentations are alternated with discussions in groups, applying some practical student active approaches for group discussions. The group discussions in turn are brought back to discussions in plenum with summarizing comments by the teachers. The students are divided into groups (from each university) and given the task to produce a short video designed to be learning material. These videos are exchanged before finalization for peer feedback from another group. The assessment consists of the video presentation and a short group report on its production. Finally, each student delivers a short reflection essay on the course.

8 Target Group

Qualification phase, prior knowledge or experience

- Recommended for PhD students at the beginning of their qualification phase
- PhD students with little or no previous knowledge
- However, participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

The course module has been offered on two occasions, the first in January 2020, before the pandemic, in an intensive two day session. The second time, a year later, it was offered on-line, and divided into two days several weeks apart. It is recommended that the module be scheduled so that the introduction and the finalization are separated by some weeks, allowing for students to plan, develop and construct some appropriate tasks. While meeting up in a real world has several desirable features, among them contact with different university cultures, the module should be possible to develop into an effective on-line module which may make it easier to plan for in the PhD students work schedule.

The concept focuses on the production of a screencast. This could also be combined with a podcast recording, which for some participants could also be an enrichment to their teaching, while usually being produced a little more easily.

Course Outline for Trainers

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	30 min.	**Welcome and Agenda** • Getting started and welcome • Agenda • Overview of expectation survey • Workshop Objectives • Organizational matters (name tags, etc.) - should mostly be clear	• Creating a good working atmosphere • Participants know the contents and working methods in the course -) how do we do it? -) documentation: photo protocol -) somewhat flexible agenda • Participants´ expectations are compared with seminar contents – what we will do and what we won´t do	• Presentation	• Welcome flipchart • Overview of agenda on wall newspaper • Course title: teaching and learning – two sides of the same coin • Clustered expectations with concept cards • Flip to collect methods • Open questions memory	• Trainer • All
	50 min.	**Getting started: activating prior knowledge and introduction into the topic** • 3 Sociograms with participants: how many semesters of teaching experience do they have? • Experience with online teaching/learning • Hobbies from A to Z	• Creating a safe container: rules for the course • Participants reflect on the topic • Activating prior knowledge, getting into the topic	• Inquiry/open question • Sociogram Concept cards • Moderated discussion/wrap up of the results • Think-pair-share	• Print outs for the floor (3 sociograms) • Two boards with cards: what are most important/challenging aspects of frontal/innovative teaching? • **Or:** Use of online toll like Oncoo (students	• Trainer • Self-presentation of the cards by participants

		-) after that, the trainers introduce themselves • Cards: most challenging/important aspects of frontal teaching and innovative teaching • 2nd card: What is your personal challenge with regard to frontal teaching? (in your field, at your university?)		• Wrapping up/meta perspectives	need mobile phone or other mobile device) or notes on smartboard	
	15 min.	**Coffee break**	• Time to reflect, exchange ideas or network with other participants			
Working phase	60 min	**Overview of models/formats of innovative teaching** • Problem- and/or project-oriented learning • Constructive alignment • Cognitive Load Theory	• Participants get an overview of innovative teaching formats	• Input • Think-pair-share • Moderated discussion	• PPT slides	• Trainer • Participants
	60 min.	**Lunch break**	• Time to reflect, exchange ideas or network with other participants			
Working phase	110 min.	**Overview of models of online and interactive face to face Teaching of online interactive teaching** • Overview on the field • Online: From enriching your teaching with online elements to "pure" online course • Introduction of MOOCs etc. • Definitions, pros and cons	• Overview of different levels of integrating online elements into your own teaching style (from "enrichment" to complete online course) • Participants get to know the characteristics and reflect pros and cons of online courses, MOOCs and webinars	• Presentation • Q&A • Moderated group discussion	• PPT	• Trainer • Participants

		Solutions to these challenges/ selected examples (online): Flipped classroom • Explaining what flipped classroom is • Elements: media production & re-structuring of the lecture (interactive class time) • What are the advantages compared to frontal teaching? • What needs to be considered for time together in class?	• Participants get to know the concept of flipped classroom • Participants learn how using flipped classroom can tackle the challenges of frontal teaching • Participants know what to consider when designing a course or lecture using the flipped classroom format	• Input: Presentation • discussion	• PPT	• Trainer
Working phase		**Development of ideas for own flipped classroom of participants** • Developing a flipped classroom format applied to their own subject matter	• Participants learn which aspects need to be considered for developing a flipped classroom format of their own and how to apply it to their own subject matter	• Individual work • Group work (4x4; deciding on 1 scenario) • Group work (20 min); focusing on one project idea) • Presentation of results (10 min. per group) • 10 min overall feedback/dis-cussion	• Work assignment on flipchart or PPT • Free choice of media for presenting their ideas	• Trainer • All participants
	15 min.	**Coffee break**				
	40 min.	**Media-production: recording and producing a screencast** • Explaining how the afternoon will be organized	• Participants get to produce/implement what they have designed beforehand		• Work assignment on flipchart or PPT	

	90 min	**Media-production: shooting a screencast** **In rotation:** • **8 participants do their recordings** in parallel (8 different rooms) • **8 participants are on break** (ca. 30 min.) to prepare their video or ask questions	Participants producing the screencast: • learn how to record a screencast	• Own video recording (parallel in 8 rooms) • Changing participants (2 rounds, lottery for rooms) • Feedback and discussion	• 8 rooms with equipment • Screencast concepts of participants	• Trainers and 2 support staff • Participants
Closing phase	30 min.	**Closure of Day 1 and outlook on day 2** • Participants´ feedback on the day • Some notes on feedback • Outlook on day 2	• Rounding off day 1 by answering open questions • Participants have clarity about agenda of day 2 • Trainer gets feedback on day one	• Oral input on feedback • One minute paper	• Feedback article in moodle • Handout: one minute paper	• All participants • Trainer

Day 2 Innovative Teaching Methods

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	20 min.	**Welcome (Day 2) and agenda** • Getting started, welcome and agenda • Wow of the day from first course day	• Creating a good working atmosphere • Participants deepen their knowledge through repetition	• Overview on wall paper • Repetition • Outlook on day 2	• Overview of topics on wall newspaper	• Trainer • All participants
Working phase	80 min.	**Learning progress control with ARS / repetition of yesterday** • What was understood by participants? (filling in the Kahoot plus explanation) • Repetition and learning progress control with ARS: Designing questions for an own ARS	• Participants learn how ARS can be applied for repetition or learning progress control • Participants deepen the knowledge about videos, ARS, peer to peer teaching • Participants learn how to design questions for an ARS in their own field	• Kahoot or other type of ARS • Group work (20 min), 4 groups • Presentation: 4x 5 min (per Group)	• 3 ARS questions from 3 different subject fields	• Trainer • All participants
	15 min.	**Coffee break**				
Working phase	30 min.	**Designing classroom hours in the flipped classroom format** • Communication • how the brain works, short term memory and attention span • Know the reasons behind these planning principles (e.g. sandwich principle, use of media/visualisation)	• Learn how to plan a lecture according to didactic principles • Learn what to consider when designing a course or lecture using the flipped classroom format	• Interactive presentation with discussion	• PPT	• Trainer

		• Get to know the three phases of lecture				
	30 min.	**Deliverables** • Outlook on next steps: webinar, concept writing and reflection (scope and criteria) • Discussion of participants own topics • other organisational aspects/confirmation of completion • appointment for webinar and next steps • ECTS and certification	• Participants get clarity about their deliverables after the course	• Input • Discussion • Q&A	• PPT	• Trainer
	80 min	**Lunch break**				
	100 min	**How to design the face-to-face time in class, using the flipped classroom model. Practical exercise: group puzzle** • 10 min introduction into group puzzle as one way of interactively using the the face to face time	• Extending the repertoire of innovative (face to face) teaching methods, when to use them and how • Participants get to know 4 interactive methods and how to apply them	• Group puzzle • First: group work (one method per group), 4 groups • Expert groups • Presentations	• PPT • Handouts	• Trainer
		Coffee break (in between, fluent)				
Closing phase	20 min.	**Outlook and Closure: Wrap up – open questions, how to proceed –**	• Rounding off the seminar • Participants have clarity about next steps (webinar, assessment, organisational	• **Input about post-course procedure and assignments**	• Online questionnaire • Online course platform	• All participants

	Online questionnaire 25 min. dates & procedure	**date for webinar, post-course assignments** • Participants´ feedback on the course (orally and questionnaire)	aspects, course certificate etc) • Trainers gets feedback on the course so far	• Evaluation questionnaire for participants • Trainer questionnaire		
	15 min.	**Good bye**	• Rounding off the course			• All

Post-course Phase

upload of materials and photo protocol.

1 Nr. | Module

VIII Teaching Methods

2 Nr. | Course Title

VIII-4 Teaching SET Classes

3 Course Format

Blended Learning Format: Class hours, webinar (post course), assessment (post course)

4 Key Data

Scope (working units in class á 45 min.): 10; ECTS points: 1

10 Learning Outcomes

- Reflect on individual teaching and learning strategies with regard to SET classes
- Know how to acquire the skills and tools to overcome the fundamental challenges in SET classes
- Know how to apply interactive teaching and learning methods in SET classes

6 Overall Contents

- Characteristics and challenges of teaching SET classes
- Didactic principles and motivation
- Key aspects of visualisation
- Blackboard, visualiser and e-chalk
- Interactive teaching and learning methods
- Solutions to time constraints
- Heterogeneous levels of prior knowledge
- Inverted classroom for SET classes
- LaTeX

7 Overview of Teaching Methods

- Input
- Working on urgent questions from participants
- Group work and presentations
- Videos
- Quizzes
- Online learning platform
- Exchange of experiences

8 Target Group

Qualification phase, prior knowledge or experience

- Recommended for PhD students at the beginning of their qualification phase
- PhD students with little or no previous knowledge
- However, participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

- Max. number of participants: 16

10 Course materials | Reading list

- Curated links

Course Outline for Trainers

Pre-course Phase |Preparation List

- Videos about problem-based learning settings (good practices) at other universities
- Reader about laboratory didactics (good practices)
- Expectation survey to be completed before class

Day 1 Teaching SET Classes

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	20 min.	**Welcome and Agenda** • Getting started, welcome • Agenda • Overview of expectation survey • Workshop Objectives • Organizational matters (name tags, etc.)	• Creating a good working atmosphere • Participants know the contents and working methods in the course • Participants´ expectations are compared with seminar contents	• Presentation	• Flipcharts • Overview on wall newspaper • Clustered expectations	• Trainer: Petra (Mod)
	45 min.	**Getting started: activating prior knowledge and introduction into the topic** • Most important question of each participant • What challenges are considered to be most related to teaching specifically SET classes? (e.g. motivation – what is this good for? Why do I need this? Heterogeneity, large classes,	• Creating a safe container • Participants reflect on the topic • Activating prior knowledge, getting into the topic	• Presentation • Think-pair-share • Moderated discussion	• Concept cards, board	• Participants • Trainer

		visualisation/chalk board, little interaction, pace, laboratory didactics/writing protocols)				
	30 min.	**Introduction to motivation of SET students** • Motivations by interactive formats (e.g. PBL, POL), • interactive methods, • attitude of the trainer, • structure and setting • what motivates students from course participants´ experience? • Which factors enhance students´ learning process?	• Reflect on individual teaching and learning strategies with regard to SET classes	• Short input • Open question • Small group work (think-pair/square-share9 • Moderated discussion	• Poster	• Trainer • Participants
	15 min	**Coffee break**	• Time to reflect, exchange ideas or network with other participants			
Working phase	30 min.	**Key aspects of visualisation – blackboard, e-chalk and visualizer** • Participants get to know the different types of media (permanent/spot media; media developed live, partly finished and finished media) • Participants know the principles of visualisation in SET classes and how to apply them to foster the learning process	• Participants know to differentiate different types of media • Participants know the principles of visualisation in SET classes and how to apply them	• Examples of distinct blackboard visualisations from maths, chemistry, engineering	• PPT	• Trainer • participants

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Working phase	70 min.	**Solutions to time constraints: flipped (inverted) classroom model** • Hearing is not learning: didactic selection and reduction • Flipped classroom model as an alternative to time constraints • Function of educational videos • How to plan and conduct face-to-face time with interactive teaching methods	• To reflect on teaching and learning principles • To get to know the flipped classroom principles and how to plan and implement it successfully	• Short videos about • Small group work • Think-square-share	• PPT • Hand outs	• Trainer • participants
	60 min.	**Lunch break**	Time to reflect, exchange ideas or network with other participants			
	20 min	**The role of quizzes and how to use them** • Kahoot and other online quizzes • Repetition of the morning with Kahoot • Shared experience: when to apply quizzes?	• To get to know quizzes and their didactical role in SET classes	• Input • Quiz • Discussion	• Kahoot	• Trainer • participants
	60 min.	**Laboratory didactics** • how to plan laboratory sessions • security measures • role of protocols and assessment	• To get to know fundamentals of lab didactics, quality criteria of protocols • Learn how to plan and assess the level of preparation for the experiments / lab work	• Input • Group work • Moderated discussion	• PPT	• Trainer • participants
	15 min	**Coffee break**	Time to reflect, exchange ideas or network with other participants			

	35 min.	**Heterogeneity of participants´ knowledge** • Support offers at the respective universities • Strategies in class to address different levels of knowledge (didactic switches) • Heterogeneous cultural backgrounds: differences in leaning & language barrier	• To get to know strategies how to deal with heterogeneity in the group successfully	• Input • Moderated discussion	• Flip • Poster & concept cards • handout	• Trainer • participants
	60 min.	**Didactic principles for teaching a programming language, e.g. LateX** • Didactic strategies for planning and conducting programming sessions • Challenges and solutions	• To get to know didactic strategies for programming	• Input • Group work: challenges and solutions • Discussion	• PPT • Poster & concept cards	• Trainer • participants
	10 min	**Coffee break**	Time to reflect, exchange ideas or network with other participants			
	50 min	**Participants´ most important questions (from the beginning) and new open questions** • For which challenge is further information needed? • Where to find it?	• Participants get the information needed to successfully plan and conduct SET classes	• Q&A • Shared experience/ good practices	• Poster with concept cards from the start	• Participants • Trainer
Closing phase	45 min.	**Outlook and Closure: Wrap up – open questions, how to proceed – date for webinar, post-course assignments** • Outlook on next steps: webinar and deliverables (scope and criteria) • Discussion of participants own topics	• Rounding off the seminar • Participants have clarity about next steps (webinar, assessment, organisational aspects, course certificate etc)	• Input about post-course procedure and assignments • “Flashlight” (oral feedback)	• Online questionnaire • Online course platform	• Trainer • all participants

		• other organisational aspects • appointment for webinar and next steps • ECTS and certification • Participants´ feedback on the course (orally and online questionnaire)	• Trainers gets feedback on the course so far	• Evaluation questionnaire for participants • Trainer questionnaire		

Post-course Phase

Deliverables

- 2 page reflection on the course and what has been learned (individually)
- Working in groups of 2 people: Describing a particular setting from the participants´ context and design a course outline of a 90 min lecture in alignment with learning outcomes of the session and didactic principles discussed.
- Provide and receive feedback to the concept of one other group.
- Improved concept to be uploaded on the online learning platform.
- Presentation of the refined concept in the webinar, focusing on the challenges of SET classes and how they have been addressed in the the concept (max. 7 minutes)
- 1 page reflection on the group process (2 people) and how the group has dealt with the feedback.

- Transfer survey to be completed about 6 months after the seminar

1 Nr. | Module

VIII Teaching Methods

2 Nr. | Course Title

VIII-5 Assessment and Grading

3 Course Format

Blended learning format: Class hours, webinar (post course), assessment (post course)

4 Key Data

Scope (working units in class á 45 min.): 10; ECTS points: 1

5 Learning Outcomes

- Know how to prepare, perform and grade examinations effectively
- Know how to align learning goals with examination settings
- Learn how to write protocols on oral and reports on written exams
- Know key criteria of competence-based grading
- Know how to apply criteria and grading standards to student performanc
- Know how to coach students for examinations and how to overcome blocks and challenges

6 Overall Contents

- Introduction to examination law as basic framework
- Effective preparation of exams
- Suitable assessment formats according to learning goals
- Key criteria for competence-based assessment, grading and evaluation
- Student support for exam preparation
- Examples of distinct and innovative examination methods
- Online exams
- Suitable scales and criteria for measuring the validity of examination ratings

7 Overview of Teaching Methods

- Input
- Examples of distinct examination types (written exam, oral presentation, multiple choice, online-exams, single and group exams)
- Group work
- Online exercises
- Webinars
- Exchange of experiences

8 Target Group

Qualification phase, prior knowledge or experience

- Recommended for PhD students at the beginning of their qualification phase
- PhD students with little or no previous knowledge
- However, participants with previous experience can deepen their knowledge

9 Tipps for implementation | Adjustments

Max. number of participants: 16

10 Course materials | Reading list

- Curated links

Course Outline for Trainers

Pre-course Phase |Preparation List

- Information about the respective legal situation (with regard to country and university)
- Expectation survey to be completed

Day 1

Course Phase	Time| Duration	Content | Topics	Objectives	Teaching Methods	Media | Material	Active Participants
Introductory phase	20 min.	**Welcome and Agenda** • Getting started, welcome • Agenda • Overview of expectation survey • Workshop Objectives • Organizational matters (name tags, etc.)	• Creating a good working atmosphere • Participants know the contents and working methods in the course • Participants´ expectations are compared with seminar contents	• Presentation	• Flipcharts • Overview on wall newspaper • Clustered expectations	• Trainer: Petra (Mod)
	45 min.	**Getting started: activating prior knowledge and introduction into the topic** • Most important question of each participant • Challenges related to the respective assessment scenario	• Creating a safe container • Participants reflect on the topic • Activating prior knowledge, getting into the topic	• Presentation • Think-pair-share • Moderated discussion	• Concept cards, board	• Participants • Trainer

Working phase	25 min	**Introduction to examination law as basic framework** • Legal framework with regard to country and university specifics	• Getting to know the legal framework	• Input • Questions and discussion	• PPT	• Trainer • Participants
	15 min	**Coffee break**	• Time to reflect, exchange ideas or network with other participants			
Working phase	60 min.	**Effective preparation of exams: constructive alignment** • What is constructive alignment? • How to align learning objectives with examination settings?	• Know how to align learning goals with examination settings • Know how to prepare exams effectively	• Input • Group work • Discussion	• PPT • Practical examples from own practice	• Trainer • participants
Working phase	30 min.	**Competence-based assessment** • Key quality criteria for competence-based assessment and grading • Application to students performance	• Know key criteria of competence-based grading • Know how to apply criteria and grading standards to student performance	• Input • Moderated discussion	• PPT • Handouts (practical examples)	• Trainer • participants
	60 min.	**Lunch break**	Time to reflect, exchange ideas or network with other participants			
	45 min	**Characteristics of distinct examination scenarios and requirements for grading staff** • individual and group exams • written and oral exams • portfolio examination	• get to know characteristics, requirements and specifics of distinct examination forms • learn how to write protocols on oral and written exams	• Input • Questions and answers • Group work	• PPT • Handouts	
	90 min	**Applying constructive alignment to participant´s scenarios**	• Participants learn how to apply what they have learned to a practical case of their own	• Small group work • Presentation	• Participants´ own scenarios and how to prepare,	• Trainer • All participants

				• Reflection and discussion	implement and assess according to the guidelines learnt	
	15 min	Buffer				
	10 min.	**Coffee & bio break**	Time to reflect, exchange ideas or network with other participants			
	55 min.	**Examples of innovative types of assessment** • E.g. competence-based group assessments • E.g. E-exams	• Getting to know innovative types of assessment	• Input • Group work, group presentation • Discussion	• PPT • Handouts (concrete examples)	• Trainer • participants
	20 min.	**Coaching students: blockages and challenges** • preparing and supporting students for exams • challenges, blockages and strategies how to overcome them	• To learn about strategies how to support students to overcome challenges • Learn how to prepare students for exams, considering the specific type of examination	• Discussing challenges and solutions	• Concept cards, board	• Trainer • participants
Closing phase	45 min.	**Outlook and Closure: Wrap up – open questions, how to proceed – date for webinar, post-course assignments** • Outlook on next steps: webinar and deliverables (scope and criteria) • Discussion of participants own topics • other organisational aspects • appointment for webinar and next steps • ECTS and certification • Participants´ feedback on the course (orally and online questionnaire)	• Rounding off the seminar • Participants have clarity about next steps (webinar, assessment, organisational aspects, course certificate etc) • Trainers gets feedback on the course so far	• Input about post-course procedure and assignments • "Flashlight" (oral feedback) • Evaluation questionnaire for participants • Trainer questionnaire	• Online questionnaire • Online course platform	• Trainer • all participants

Post-course Phase/Deliverables

Deliverables

- 2 page reflection on the course and what has been learned (individually)
- Describing a particular setting from the participants´ context and the optimum form(s) of assessment, considering the principles of constructive alignments. Working in groups of 2-3 people.
- Preparing a 10 min. presentation per group to be presented in the webinar about setting, challenges and solutions.
- Writing a min. 2 page reflection on the group process.

- Transfer survey to be completed about 6 months after the seminar

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