INDUSTRIAL PHD: THE BUSINESS OF IMPACT, INNOVATION, AND CO-CREATION

Course coordinator: Dana Minbaeva, Professor, Department of Strategic Management and Globalization, Copenhagen Business School. Email: dm.smg@cbs.dk

Course administrator: Julie Skjold Omdal, Program Manager, CBS Executive, Copenhagen Business School. Email: jsk@cbs-executive.dk

Course aim
The course aims to prepare the industrial PhD students to understand and embrace the responsibility to create a business impact through their PhD research, to skillfully navigate between business and academia, and to ensure value creation.

Course rationale
The Industrial PhD Program aims at increasing knowledge sharing between universities and private-sector companies, promoting research with commercial perspectives, and taking advantage of competences and research facilities in private business to increase the number of PhDs. This course is a first step on this journey.

The course focuses on creating and strengthening a shared understanding of the Industrial PhD scheme as a unique example of collaborative research practice in both Danish and international contexts, which clearly addresses the need for and the benefit of research gaining momentum and impact in practice—in the hosting company, the academic world, and society. The vision for this course is, therefore, to consolidate and strengthen the brand value of the industrial PhD scheme and applied research both nationally and internationally by combining a classical PhD education with competencies to create and demonstrate the impact of research in practice.

The overall aims of the course are to

- offer knowledge, competencies, and skills necessary to deliver the societal value and ensure business impact created by the industrial PhD project,
- enhance networking among industrial PhDs and ensure knowledge sharing, creation of innovative opportunities, and cracking the interdisciplinary challenges, and
- contribute to business-oriented innovation and entrepreneurship in Denmark.

The course is compulsory for all industrial PhD students, obtaining funds from the Innovation Fund.

Course content
The course runs 12 months. It is highly recommended to take the course during the first year of PhD studies. The course consists of two compulsory modules and one elective. These are:

- Module 2a. Project Management and Organizational Dynamics. Elective. 1.5 ECTS. October 31-November 1, 2018 (on-site)
- Module 2b. Inspiring Entrepreneurship and Making Innovation Happening. Elective. 1.5 ECTS. October 31-November 1, 2018 (on-site)
• Module 2c. A Toolkit for Communicating the Impact of Your Research—Internal and External Audiences, Media and Messages. Elective. 1.5 ECTS. October 31-November 1, 2018 (on-site).


When signing up for the course, each student should identify one elective module she or he would like to follow.

Teaching methods
The course will be carried out using a blended learning teaching style, where teaching is delivered through traditional classroom teaching, online learning, reflection exercises, feedback, peer-grading, and networking activities. The figure below illustrates the overall course.

![Industrial PhD Course flow, 12 months](image)

**The classroom teaching** includes 1.5-day introductory module, 1.5-day elective modules, and 1-day closing module. The detailed descriptions of teaching for each module are included below. Typically, teaching is conducted as a flipped classroom, where class teaching focuses on activities with a specific learning point in being together, while individual preparation and information sharing takes place online. The classes will be conducted in the workshop style with exercises, cases, and opportunities for students to work on concrete tools they could use later in their projects. Off-cite modules offer additional opportunities for interaction, dialogue, and networking.

**Online activities** are complementary to the classroom teaching and provide content for self-directed learning. That is, PhD students are expected to review the content provided online at any time within a given time frame (usually two to three weeks). There are five online activities scheduled during the course:
• Activity A: This is a pre-course activity. The assignment will be uploaded on CBS Learn on March 1, 2018, and is due April 9, 2018.
• Activity B: This activity is associated with the module 1. The detailed description is included in the module description below.
• Activity C: This activity is associated with the modules 2a-c. The detailed description is included in the module description below.
• Activity D: This activity is associated with the module 3. The detailed description is included in the module description below.
• Activity E: This is a final course activity that is going to be handed out at the end of module 3.

Feedback meetings with supervisors (both university and business) are integrated in the course design. Experience shows that the three parties (i.e., the company, the student, and the university counselor) do not meet regularly during the PhD project, and many consider the cooperation to be unsatisfactory. This is very problematic, as close relationships between these three stakeholders are one of the primary success criteria for the successful implementation of an Industrial PhD. During the course, feedback meetings shall take place twice: (1) after module 1 but prior modules 2a-c, and (2) after modules 2a-c, but prior module 3.

Peer grading: There is evidence that peer assessment enables students to learn from each other’s successes and weaknesses. The ability to access one another’s work objectively is clearly an important skill. Also, this will support group and collaborative learning so that students are given the opportunity to create professional and social relationships with other peers. The evaluation will be done online using tools available through the online platform CBS Learn. The Industrial PhD students will be organized in relevant thematic as well as interdisciplinary groups.

Network events: The importance of building strong networks will be emphasized throughout the process. However, there will be two events with the following specific topics: "Speed Dating on Ideas" in Module 1 and "Pitch Your PhD" in the evening of elective modules. In addition, the PhD students will be invited to join the networks organized afterward, including a mentoring system with the course alumni.

Examination
Course participation is assessed as passed/not passed. The evaluation is ongoing and assessed by the evaluation of students’ participation in all course activities, that is, through 1) active participation in the activities carried out in and between classroom education, 2) submission of all the study products and online activities defined for each module, and (3) completion of the feedback cycle.

Assessment is an integral part of the course progress and pedagogy. It is not only a necessary final formality but also focuses on value-creating learning activities that are directly transferable to the student’s practice along the way.

In the next sections, we present a detailed description of each of the modules. We reserve the right to make changes in the time, venue, and faculty, as well as minor modification of the content.
MODULE 1: THE BEST OF BOTH WORLDS—THE POTENTIALS AND PITFALLS OF MUTUAL VALUE CO-CREATION IN BETWEEN ACADEMIA AND PRACTICE

Type: Required
ECTS: 2 ECTS
Dates: April 23-24, 2018
Place: Sørup Herregård, Sørupvej 26, 4100 Ringsted

Faculty:
Rikke Kristine Nielsen, Assistant Professor, Department of Communication & Psychology, Aalborg University Copenhagen (module coordinator).
Flemming Poulfelt, Professor, Department of Management, Politics & Philosophy, Copenhagen Business School.

Module aims:
An industrial PhD is a PhD like all other PhDs. At the same time, an industrial PhD research is also a unique form of research and practice knowledge co-creation. The objective of the industrial PhD is the same as a traditional PhD education, but the process toward the end goal is different because the industrial PhD researcher's position between practice and research comes with special opportunities and challenges. Experience from the industrial PhD program informs us that these opportunities and challenges transcend academic disciplines and scientific traditions, so this introductory module focuses on the special role of the industrial PhD researcher.

This module enables industrial PhDs to proactively position themselves and navigate in a field characterized by a variety of stakeholders with different conceptions of quality and value with a view to simultaneously creating value in the research project for the host organizations, their field of research, society, and themselves.

Module content:
The module consists of two sections:

Section 1: Constructive controversy—value creation in between academia and practice
This part introduces participants to module 1 and subsequent modules of the course, as well as to other participants on the premise that networking and knowledge exchange with peers are central aspects of the course. To this end, an “industrial PhD collaboratorium” of experienced industrial PhD stakeholders is gathered to share ideas and advice for doing industrial PhD research and debate industrial PhD research with participants. As a springboard for engaging in this discussion, section 1 also focuses on strategies for stakeholder navigation and value optimization in academia-practitioner knowledge co-creation research settings as both a field of research and a research practice.

Section 2: Capturing individual, organizational, and societal impact—answering the questions of ‘So what?’ and ‘What’s in it for you?’
This second section of module 1 focuses on industrial PhD research impact in the context of the host organization and the strategic priorities with a view to building a business case and stakeholder analysis of the individual industrial PhD researcher's project, placing it in the value chain and wider stakeholder ecosystem.
**Learning objectives:**
By participating in this module, the participant will acquire

- an understanding of and practical tools for optimization of the industrial PhD researcher’s role as a knowledge entrepreneur in-between research and practice,
- suggestions for strategies for impact optimization and multi-stakeholder cooperation,
- great and best practice: Inspiration for “dos and don’ts” in industrial PhD research from industrial PhD practitioners and extant literature, and
- membership in a community of practice through networking and knowledge sharing with peers.

**Teaching methods:**
This off-site module is conducted in an interactive workshop format, where participants work with stakeholder value creation and research impact in plenary, group work, and individual reflection. Highlights of the module literature are presented in videos made available to participants before the module so that we may spend our time together debating the takeaways from the literature and convert theoretical arguments to practical tools to be used in the participants’ projects, seeking inspiration from each other, as well as guest lecturers/panelists.

**Examination:**
To pass this module, the industrial PhD student must actively participate in the module’s teaching activities by engaging in the following “learning by doing” actions before, during, and after the module.

1. Prior to participating in the module, the industrial PhD student must
   a. complete a survey on his/her research project and background and
   b. conduct a 45-minute interview with a central industrial PhD research project stakeholder about the practical value and impact of the research project.

2. During the module, the industrial PhD student is required to
   a. participate in the teaching activities, including group work, by being present for all sessions offered as part of module 1 and

3. After module 1—and before module 2—the industrial PhD produces
   a. a business case for his/her industrial PhD project to be discussed with university and host organization supervisors who give written feedback on the business case to the participant which counts as documentation of this activity and
   b. a 5-7-page stakeholder analysis of central industrial PhD project stakeholders for which the participant receives written feedback through peer grading from co-students.

**Indicative literature:**


Follow-up readings will be uploaded on CBS Learn after the module.
MODULE 2, ELECTIVE A: PROJECT MANAGEMENT AND ORGANIZATIONAL DYNAMICS

Type: Elective
ECTS: 1,5 ECTS
Dates: October 31 – November 1, 2018
Place: Hotel Park Middelfart Viaduktvej 28, 5500 Middelfart
Faculty:
Kirsten Nielsen, Owner, Senior Consultant, KnowledgeDesign.

Module aims:
This module will enhance the initial and overall planning of the PhD project by focusing on the PhD student’s personal ability to analyze, plan, and initially conduct the PhD process. The module will offer the students an insight into the organization of projects in larger companies. A mix of theory and “hands-on” activities, will enable them to develop a personal strategy and a milestone plan for the individual PhD project. The training will engage the students in activities that help them approach and present their projects in a more professional and powerful way, which will help them when communicating and working with their hosting company/organization.

Module content:
The intention is that all subjects in the curriculum of this module will be illustrated through practical exercises, relating the theory and the analytical tools to the individual PhD project.

Project definition and the project as a Business Case
Defining the core elements of a project, the project triangle, complexity analysis, project types and description of the Business Case/project contract. Initial reflection on the student’s project type and description.

Project management as a work form.
Ways of organizing projects, organizational maturity, portfolio management, PMO, project models and documentation.
Roles and responsibilities in projects. Focus on the project managers role and responsibility and the communication with the project owner/steering committee. The role as project manager of the student’s PhD project.

The overall goal setting of a project.
Defining the strategic objectives and the expected success. Adjusting expectations of the outcome and the quality of the project. Goal setting of the student’s PhD project.

Stakeholder analysis and communication—a strategic approach
Using the stakeholder analysis and communication plan as a tool for navigating in the project, securing ongoing “calibration” of the plan. Stakeholder analysis of the student’s PhD project (building on experiences from module 1). Converting the stakeholder analysis to a communication strategy/plan

Planning the project – milestone planning
Dilemmas in planning—the iterative element of all planning in an uncertain world. The principles of a solid project plan. Definitions and planning methods. Work Breakdown Structure (WBS) as a tool. Converting the WBS to an overall project plan for the student’s PhD project.
Risk analysis—how to qualify the planning process.
Risk vs. uncertainty. Using risk analysis as a strategic tool to secure the initial and ongoing calibration of the plan. Identifying the risk in the student’s project, sharing vital risk with the project owner/steering committee, and implement the actions needed in the project plan.

**Personal profile and the role as an industrial PhD student.**
The challenges of self-management. Introduction to examples of preference profiles (MBTI, Belbin, etc.). The characteristics of the industrial PhD role vs. personal preferences. Personal SWOT analysis

**Learning objectives:**
After this module, the participants will have gained knowledge, tools, and methods to

- plan and manage the industrial PhD project, knowing what challenges this type of project can face in an industrial and business-driven setting,
- structure own daily planning and management of the project to establish and support progress and pace, while highlighting important milestones (professional results) throughout the project,
- implement and communicate professional ambitions and results to key stakeholders before, during, and after the PhD project and thereby strengthen the professional dialogue between the student and the organization, continuously emphasizing and confirming the mutual value of the PhD. project for all parties, and
- consider the impact that the student’s personal preferences might have on the ability to self-manage the project, involve stakeholders, and communicate results throughout the project.

**Teaching methods:**
The module combines a 12-12-hour workshop (two half days and one evening) with online activities. At the workshop, pedagogical methods alternate between short presentations, dialogue and group work. Online methods encompass videos, presentations, tests, and a final exam including feedback.

**Examination:**
During the module, the industrial PhD student is required to participate in the teaching activities, including group work, by being present for all sessions offered as part of module 2. After the module, the students will need to deliver a short presentation/paper and will receive feedback. The presentation should demonstrate the practical use of one or more tools and methods from the module on the student’s PhD project.

**Indicative literature:**


Follow-up readings will be uploaded on CBS Learn after the module.
MODULE 2, ELECTIVE B: INSPIRING ENTREPRENEURSHIP AND MAKING INNOVATION HAPPEN

Type: Elective
ECTS: 1,5 ECTS
Dates: October 31–November 1, 2018
Place: Hotel Park Middelfart Viaduktvej 28, 5500 Middelfart

Faculty:
Jacob Lyngsie, Professor, University of Southern Denmark
Guest lectures

Module aims:
The module explores entrepreneurial behavior by individuals that leads to the discovery of new business opportunities and how established firms may exploit such opportunities. Entrepreneurship has become a key focus area in today’s dynamic competition. The classical type of entrepreneurship, self-employment, has become a means to fuel growth. However, the view that the study of entrepreneurship means the study of people who create companies is unnecessarily constraining. However, entrepreneurship also involves complex processes of assembling bundles of complementary resources and coordinating actions and investments over time in the pursuit of profit under uncertainty—all activities associated with the established firm. Thus, recruitment and support of employees engaging in entrepreneurial behavior is a key factor in firms’ competitive strategy. However, until recently, most research has focused on the individual entrepreneur establishing a new venture and given little emphasis on the entrepreneurial behavior carried out by salaried employees. Also, most managerial advice about entrepreneurship within established firms has been based on anecdotal evidence or single case studies.

This module breaks with the focus on individuals and instead emphasizes that established firms may be uniquely positioned to use organizational mechanisms that exacerbate entrepreneurial behavior. In relation to the industrial PhD program, this may involve exploring questions such as: who should be entrusted with engaging in entrepreneurial activities, what is the role of senior management in the entrepreneurial process, and how do firms organize to emphasize the entrepreneurial motivation of their employees. In addition to a research-driven curriculum, students are prompted to apply module material to practical business circumstances. This involves, for example, relating research findings to business cases and discussion with industry guest speakers.

Module content:
The module centers on entrepreneurial behavior by individuals. This entails exploring human capital antecedents of employees in terms of their proclivity to engage in entrepreneurial activities. However, as most of the module is based on entrepreneurial activities within established firms, an integral part of the module deals with how firms may organize such behavior. However, unlike a new venture undertaken by an individual, entrepreneurial activities within established firms may broadly be separated into three different activities: discovery, evaluation, and exploitation. Thus, organizing entrepreneurial activities not only requires that entrepreneurial behavior is encouraged by the firm’s organizational setup but also that different phases are coordinated. Specifically, the module focuses on

- conceptualisation and analysis of entrepreneurial behavior within established firms,
- understanding key drivers of entrepreneurial behavior and how these may differ between different entrepreneurial activities,
• delineation and consideration of the role played by managers in establishing “pro-entrepreneurial firms,” and
• practically orientated application of research findings and appreciation of the complexity of balancing different entrepreneurial activities.

Learning objectives:
After this module, the participant will

• be able to reflect on an informed basis on the nature and antecedents of entrepreneurial behavior,
• be familiar with the analytical tools needed to manage constituent factors relating to entrepreneurial behavior within established firms,
• understand the differences between various aspects of entrepreneurial behavior and how these may be separated within the firm, and
• identify organizational misalignment with entrepreneurial activities and apply practical tools to enhance entrepreneurial activities.

Teaching methods:
The module combines a one-day workshop with several online activities. At the workshop, the pedagogical approach varies between lectures, dialogue-based discussion, and student presentations based on group work. Throughout the module, online methods will be utilized to enrich the learning experience. This may encompass videos, information search, online group meetings, and student feedback on group work.

Examination:
To pass this module, the industrial PhD student must actively participate in the module’s teaching activities by engaging in the following “learning-by-doing” action before, during and after the module.

1. Before participating in the module, the industrial PhD student must prepare a 10-minute presentation on her or his research topic and explain how this relates to innovative/entrepreneurial behavior.
2. During the module, the industrial PhD student is required to participate in the teaching activities including group work by being present for all sessions offered as part of the module

Indicative literature:


Follow-up readings will be uploaded on CBS Learn after the module.
MODULE 2, ELECTIVE C: A TOOLKIT FOR COMMUNICATING THE IMPACT OF YOUR RESEARCH—INTERNAL AND EXTERNAL AUDIENCES, MEDIA, AND MESSAGES

Type: Elective
ECTS: 1.5 ECTS
Dates: October 31–November 1, 2018
Place: Hotel Park Middelfart Viaduktvej 28, 5500 Middelfart

Faculty:
Rikke Kristine Nielsen, Assistant Professor, Department of Communication & Psychology, Aalborg University Copenhagen (module coordinator)
Frederikke Winther, Assistant Professor, Department of Communication & Psychology, Aalborg University Copenhagen.
Lars Holmgaard Christensen, Associate Professor, Department of Communication & Psychology, Aalborg University Copenhagen.
David Budtz Pedersen, Professor, Department of Communication & Psychology, Aalborg University Copenhagen.

Module aims:
This module aims at establishing a solid foundation for the development of industrial PhDs’ communication competence with a view to enhancing the ability and motivation for effectively communicating the value of their research in a multi-stakeholder research setup. The module takes as its point of departure that

- research communication is an active and productive element of the collaborative research process which can stimulate dialogue, mutuality, and value creation, and
- industrial PhDs stand to gain from being able to address many different interests and values in their communication and not only after project completion, but also during the research project as pathways for fostering productive interactions with stakeholders, trust, and room for maneuvering.

In effect, this module aims at making participants capable of delivering on their knowledge dissemination obligation in an active, strategic, and meaningful way.

Module content:
This module introduces theoretical perspectives of and practical tools for communicating industrial PhD research in speech and writing both internally in the host organization as well as externally to the broader public through different communication channels and media. The first section of the module will introduce topics such as handling media exposure/contact, social media communication as well as positioning and planning of research communication through several communication production exercises:

1. The T-model: What’s your argument, who cares, and so what?
2. Rhetorical positioning: Communicating from your different industrial PhD positions
3. Communication plan: Incorporating communication in your research plan
4. Process communication: How to communicate internally in the host organization
5. Show, don’t tell! Using visual communication
6. “Recycling” and remediation: From academic paper to newspaper, from poster to podcast.
7. Your communication log: Past, present, and future actions

The second section of this module will invite participants to reflect upon the role of communication with respect to securing research impact through productive interactions with stakeholders and as a platform for social capital buildup.

Learning objectives:
By participating in this module, the participant will obtain

- training in planning and execution of research communication activities,
- the ability to formulate central story lines tailored to different groups of stakeholders,
- training in handling communication activities in established news media as well as social media,
- practical research communication tools,
- the ability to formulate and disseminate the value and impact of the individual research project, and
- an understanding of the way in which research communication is an integral part of research impact in both practice and academia.

Teaching methods:
This off-site module is conducted in an interactive workshop format in which participants work with stakeholder research communication in plenary, group work, and individual reflection. Highlights of the module literature are presented in videos made available to participants before the module so that we may spend our time together building theoretically informed research communication tools to be used when communicating the individual participant’s research project.

Examination:
To pass this module, the industrial PhD student must actively participate in the module’s teaching activities by engaging in the following “learning by doing” actions during and after the module. During the module, the industrial PhD students are required to

- participate in the teaching activities including group work by being present for all sessions offered as part of module 1,
- produce communications tools tailored to their own project, and
- give a presentation, “an elevator pitch,” of their research project.

Indicative literature:


Follow-up readings will be uploaded on CBS Learn after the module.
MODULE 3: EMPOWERMENT ON THE PERSONAL LEVEL: INCORPORATE CAREER GOALS, KEEP UP ENERGY, AND MANAGE THE SUPERVISORY RELATIONSHIP IN THE INDUSTRIAL PHD SETTING

Type: Required
ECTS: 1.5 ECTS
Place: Copenhagen

Faculty:
Mirjam Godskesen, Independent Consultant in UNWIND, Part-time lecturer, AAU

Module aims:
This module aims to empower the participants by giving them personal tools that target the specific challenge to navigate in the Industrial PhD setting. When the participant take module 5, they are at the middle stage of the PhD study, which is often characterized by challenges such as increasing time-pressure and the feeling that there is still far to go. The module addresses three topics that are specifically challenging for industrial PhD students:

1. Worries about possible career paths
2. Different expectations from the academic and industrial setting
3. Coping with stress and exhaustion due to their many obligations

It also rounds up the course; while module 1 explores the in-between position of an industrial PhD student as a particular platform of inquiry and knowledge creation that comes with a range of possibilities and challenges, module 5 further explores this position, zooming in on the ability to handle these special challenges and opportunities on the more personal level.

Module content:
Each of the three challenges refers to a separate teaching element in the module.

Career paths explored from an activity and strengths perspective
Input to this teaching element comes to a large extent from module 1 where former industrial PhD students have participated and shared their stories. This is supplemented by a flipped-classroom element, where participants watch a video made specifically for the module where former industrial PhDs are interviewed about their career choices and significant moments on their journey to their current position. Inspired by these examples, participants explore their dreams from an activity and strengths perspective. They prepare by 1) finding three examples of positions they would like to hold after the PhD and 2) by mapping activities in their work as an industrial PhD according to a method focused on strengths and activities. At the workshop, participants will share their work, challenge and inspire each other on alignment between career goals and strengths, and 3) write a one-page reflection on their career plans and possibilities.

Managing supervisory relationships and organizational expectations
This teaching element takes its starting point in a presentation in which the PhD student is characterized as a “boundary subject,” and it will be exemplified how and why the special supervisory relationships in the industrial PhD study are both challenging and potentially very rewarding. Participants will reflect on how their own PhD is “orchestrated” and share their experiences in groups. A one-page reflection is written and will be shared and commented on in peer groups. This reflection is included in the final portfolio.
Balancing between inspiration and exhaustion

The third teaching element explores inspiration and exhaustion as two sides of the same thing. Cross-pressure, realistic planning, and taking on the optimal amount of challenges will be addressed. Participants will make a game plan before the module and discuss realistic planning and priorities at the workshop in small groups.

Learning objectives:
After this module, the participant will be able to

- reflect on an informed basis concerning possible career paths after the PhD study,
- connect one’s career goals to specific competence development during the PhD study,
- navigate more safely in the field between academia and industry and in handling relations in the supervisory group,
- manage and prioritize one’s work in the cross field between diverging expectations in different organizational settings, and
- keep a healthy work-life balance and a proactive approach to stress.

Teaching methods:
The module combines a one-day workshop with several online activities. At the workshop, pedagogical methods alternate between short presentations, dialogue, and group work in groups of different sizes. The online methods encompass videos, activity mapping based on tools, investigations of possibilities, online group meetings, and a reflection paper.

Examination:
To pass this module, the industrial PhD student must actively participate in the module’s teaching activities by engaging in the following activities before, during, and after the module:

1. Before the course, participants are required to
   a) watch a video (flipped classroom method),
   b) find three examples of possible positions after the PhD,
   c) map their activities for two weeks according to the strengths perspective, and
   d) prepare a “game-plan” for a 14-day period.

2. During the course, participants are required to
   a) participate in the teaching activities including group work by being present for all sessions offered as part of module 5,
   b) challenge each other on career goals in small groups,
   c) discuss the realistic planning based on the “game-plan” in small groups, and
   d) share in groups their experience of how their PhD is “orchestrated.”.

3. After the course, participants are required to
   a) write a 1-page reflection on “orchestration” of their PhD study, comment on it in peer-groups.

Indicative literature:


Follow-up readings will be uploaded on CBS Learn after the module.