

Идентификатор документа, задачи / ID: 475877 v.1, 444701



ДОКУМЕНТ ПОДПИСАН ПРОСТОЙ ЭЛЕКТРОННОЙ ПОДПИСЬЮ /
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Course Title (in English)

Industrial Immersion

Course Title (in Russian)

Производственная практика

Lead Instructor

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1. Annotation

Course Description

The goal of Industrial Immersion program is to provide for Skoltech students real hands-on work experience in an industrial sector and develop the knowledge and skills for making an impact through engineering and innovation. The Industrial immersion is performed in a sector company and it implies that internships at academic institutions (like universities etc.) are excluded. Duration of program is 8 weeks. Project focuses on short-term development, manufacturing or operations challenges rather than long-term research problems and is co-supervised by company and Skoltech. The internship is cooperatively planned: project assignment is provided by a company and subject for approval of Industrial Immersion Program Coordinator (I.I.P.C.).

Аннотация

Цель программы "Индустриальное погружения" — предоставить студентам Сколтеха опыт практической работы в промышленном секторе, развить навыки и знания для их будущего применения в областях инженерии и инноваций. Индустриальное погружение осуществляется в отраслевой компании и исключает практику в академических учреждениях (например, университетах и т. д.). Продолжительность программы 8 недель. В отличие от долгосрочных исследовательских задач проект практики представляет собой выполнение краткосрочной технологической задачи в сфере разработки, производства или эксплуатации под руководством кураторов от компании и Сколтеха. Подготовка проекта практики планируется Институтом и компанией совместно: задание на проект предоставляется компанией и подлежит утверждению координатором программы индустриального погружения

2. Basic Information

Course Academic Level

MSc

Number of ECTS credits

12

Course Prerequisites / Recommendations

To participate in Industrial Immersion a student should successfully complete the compulsory courses of the 1st year of study.

Type of Assessment

Pass/Fail

Grading Scale**Pass:**

90

Course Term (in context of Academic Year)

Summer Term

Students of Which Programs do You Recommend to Consider this Course as an Elective?

BSc Programs	Masters Programs	PhD Programs
	AI in Robotics Advanced Computational Science Advanced Manufacturing Technologies Applied Computational Mechanics Applied Photonics and Optical Information Systems Data Science Digital Electrical Energy Energy Systems Engineering Systems Internet of Things and Wireless Technologies Life Sciences Materials Science Next Generation Communication Technologies Petroleum Engineering Photonics and Quantum Materials	

Maximum Number of Students

	Maximum Number of Students
Overall:	300
Per Group (for seminars and labs):	300

3. Course Content**ECTS Credit System – Reference Tool**

Total Number of ast. Hours in Your Course 324

Maximum Contact Hours in Your Course 162

Topic	Summary of Topic	Contact Hours: Lectures	Contact Hours: Seminars	Contact Hours: Labs	Non-contact Hours: Student's Independent Study
Self-marketing on Paper.Resume.	Students prepare and submit resumes via Canvas due to the date specified by Education Office. Strong and competitive profile increases student's chances to be selected into a high-quality project with a prestigious company.	1			
Project work in a company. Final report.	Students work in a company on project assignment. The results are to be provided in a written form: - individual report is submitted via Canvas and approved both by company project supervisor and Skoltech project supervisor.	320			
Presentation	Students are required to make written and oral presentation of their project: - project team poster is submitted via Canvas and approved both by the company project supervisor and Skoltech project supervisor; - students should exhibit their posters at the Skoltech Industry Day and be prepared to answer questions about the project implementation and results.	3			

4. Learning Outcomes

Please specify course intended learning outcomes using [Skoltech Learning Outcomes Framework](#)

1. FUNDAMENTAL KNOWLEDGE

1.1. KNOWLEDGE OF MATHEMATICS AND NATURAL SCIENCES

1.2. KNOWLEDGE OF APPLIED SCIENCE AND ENGINEERING SCIENCE INCLUDING CONTEMPORARY METHODS AND TOOLS

1.3. KNOWLEDGE OF INNOVATION AND ENTREPRENEURSHIP

2. PERSONAL AND GENERAL PROFESSIONAL SKILLS AND ATTRIBUTES:

2.1. COGNITION AND MODES OF REASONING

2.1.1. Analytical reasoning and problem solving

2.1.2. System thinking

2.1.3. Creative thinking

2.1.5. Critical thinking and meta-cognition

2.3. ETHICS, EQUITY AND OTHER RESPONSIBILITIES

2.3.5. Proactive vision and intention in life

2.3.6. Commitment to social and professional behavior

3. INTERPERSONAL SKILLS

3.1. COMMUNICATIONS IN INTERNATIONAL ENVIRONMENTS

3.1.3. Oral presentation and discussion

3.1.6. Effective interaction in different cultural and international settings

3.2. TEAMWORK AND LEADERSHIP

3.2.1. Forming effective teams

3.2.2. Team operations and project management

3.2.5. Technical and multidisciplinary teaming

3.3. COLLABORATION AND CHANGE

3.3.1. Establishing diverse connections and networking

4. LEADING THE INNOVATION PROCESS

4.2. VISIONING – INVENTING NEW TECHNOLOGIES THROUGH RESEARCH

4.2.3. Research aimed at developing new technologies

4.3. VISIONING – CONCEIVING AND DESIGNING SUSTAINABLE SYSTEMS

4.3.2. Identifying and formulating objectives and goals

4.3.5. Understanding the technical context and ecosystem of the product or service

4.4. DELIVERING ON THE VISION – IMPLEMENTING AND OPERATING

4.4.2. Manufacturing and supply chain operations

4.4.4. Implementation and operations management

4.5. DELIVERING ON THE VISION – ENTREPRENEURSHIP AND ENTERPRISE

4.5.4. Initiating engineering and development processes

5. Assignments and Grading

In-person Attendance Requirement 320

Assignment Type	Assignment Summary	% of Final Course Grade
Project	Students work in companies over a period of eight weeks during summer term. The project work is performed under close guidance of a company project supervisor and Skoltech project supervisor. Following the end of the industrial immersion students should fill in the on-line report form and submit it via Canvas on the final day of the immersion. The report is approved by company project supervisor and Skoltech project supervisor.	70
Poster	Together with individual report students should also submit individual/team project posters via Canvas. A poster comprises the following sections: 1)Project title; 2)Background of the Project Task; 3)Objectives; 4)Process; 5)Results; 6)Conclusions. Poster template is provided and should be used as mandatory to ensure a better visibility of all posters exhibited at the Industry Day.	20
Other	All students should attend Skoltech Industry Day, exhibit their posters at a poster session and answer questions. The poster should be provisionally approved by company project supervisor and Skoltech project supervisor.	10

6. Assessment Criteria

Select Assignment 1 Type

Project

Input Sample of Assignment 1 or Share a Link to Assignment 1

More details are provided in LMS - Canvas.

Or Upload Sample of Assignment 1

Assessment Criteria for Assignment 1

The project is fully completed as per the task set by the company, the expected results are achieved. The report is submitted by a student in Canvas on time. The report is approved by company project leader and Skoltech Supervisor as Pass/Fail.

The report consists of three sections:

1. Describe what you have accomplished (be specific) and the progress made toward the objective/goal
2. Describe any significant problems you faced and solutions found. If a project took a different course and your tasks/goals changed (from initially planned), describe why
3. Summarize the outcomes of the project for the company (how the results can be used/implemented).

Criteria for the PASS assessment:

1. realization of project diligently and in accordance with company's requirements;
2. results meet the planned objective considering the industrial environment and constraints.

Select Assignment 2 Type

Other

Input Sample of Assignment 2 or Share a Link to Assignment 2

Poster. More details are provided in LMS - Canvas.

Or Upload Sample of Assignment 2

Assessment Criteria for Assignment 2

Poster is created against the template and submitted via Canvas. The poster is approved by Company project leader and Skoltech Supervisor. Quality check includes 1.compliance of the presented information with the actual work performed; 2. Structuring of information and formatting of text as per the template - text is clear and to the point; 3. Effective use of graphics, color and fonts; 4.Content is in accordance with the structure of the poster template.

Select Assignment 3 Type

Other

Input Sample of Assignment 3 or Share a Link to Assignment 3

Participation in Industry Day

Assessment Criteria for Assignment 3

Students attend Skoltech Industry Day, exhibit posters at a poster session and answer questions about the project implementation and results.

7. Textbooks and Internet Resources

You can request at most two required textbooks. Additionally, you can suggest up to nine recommended textbooks.

Required Textbooks	ISBN-13 (or ISBN-10)
Product design and Development, Karl T. Ulrich, Eppinger, fifth edition.	9780073404776

Recommended Textbooks	ISBN-13 (or ISBN-10)
Technology Entrepreneurship: Taking Innovation to the Marketplace Thomas N. Duening, Robert A. Hisrich and Michael A. Lechter.	9780124201750

Recommended Textbooks	ISBN-13 (or ISBN-10)
Lean Customer Development: Building Products Your Customers Will Buy, Cindy Alvarez.	9781492023746

Web-resources (links)	Description
https://disk.360.yandex.ru/i/84o8fKw5j0zT_w	PPT

8. Facilities

Software
Provided by a host company if necessary

Equipment
Provided by a host company

9. Additional Notes

Free Style Comments (if any)

- Short list of companies and projects is prepared by Skoltech and offered to students;
- Proposal for internship project with a certain company can arrive directly from a student but the project needs to be approved by Skoltech;
- Best industrial immersion project is selected by each Program and awarded at the Conference Skoltech Industry Day:

Overall criteria:

- Industrial component is clearly presented
- Industrial application of the project findings is apparent
- Positive/exceptional feedback of the host company
- Results clearly met or exceeded the planned objectives

Poster:

- Context section provides appropriate perspective/background for the subject
- Objectives are clearly stated
- Process described is accurate and transparent.
- Objectives are met/addressed
- Clarity of presentation. Referencing tables, graphs etc. are well arranged

<https://summer-internship.skoltech.ru/>

Is this syllabus complete?

Yes, the syllabus is a final draft waiting for approval by Education Department

The proposed course 1) has explicit academic content and requirements for receiving credits, 2) is in alignment with the program's learning outcomes, 3) adheres to policies and Skoltech regulations.

Lead Instructor confirms

