



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Innovative entrepreneurship [S1S1E>INNP]

### Course

Field of study

Artificial Intelligence

Year/Semester

3/5

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

English

Form of study

full-time

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

30

### Number of credit points

4,00

### Coordinators

dr inż. Joanna Majchrzak

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dr inż. Bartłomiej Prędko

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### Lecturers

### Prerequisites

Student has a basic knowledge and competences related with the introduction to entrepreneurship.

Student, in terms of the social competences, has attitudes such as, honesty, responsibility, persistence, cognitive curiosity, creativity, propriety, respectfulness to the others.

### Course objective

Course objectives: 1. Student know how to establish and develop the own IT company. 2. Student has the basic knowledge of methods and tools for systematic innovation and know how to apply the selected methods. 3. The development of the competences, such as, entrepreneurship, designing, IT product quality assurance and its market acceptance, business planning, attract financial support and the other competences which are crucial for the start up's development. 4. Student has a ability to work creatively and to work in teams.

### Course-related learning outcomes

## Knowledge

K1st\_W8: Student knows and understands the general rules of starting and running a business (including individual enterprises), as well as basic economic concepts related to IT projects and investments.

K1st\_W10: Student has a basic knowledge of patents, the law of copyright and related rights, fundamental rights of intellectual property and personal data protection, as well as transfer of technology mainly related to computer solutions within the scope of artificial intelligence.

## Skills

K1st\_U5: Student has basic intellectual capabilities in social and economic sciences needed for carrying out engineering activities and allowing to detect economic, ethical, legal, and social aspects when formulating and solving the IT tasks.

K1st\_U6: Student has the necessary training for working in a business environment, including an industrial environment, and knows the safety rules related to the work of a computer scientist - a specialist in the field of AI.

K1st\_U14: Student can employ information and communication tools at different stages of carrying out the IT projects, including elaborating a well-documented problem study, giving an oral presentation, communicating through specialized terms, and discussing diverse opinions in both technical and nonspecialized environments.

## Social competences

K1st\_K5: Student can think and act in an enterprising way, finding the commercial application for the created AI-based systems, having in mind the economic benefits as well as legal and social issues.

K1st\_K6: Student is aware of the social role of a graduate of the university of technology and understands the need to inform society, in an intelligible way, on the engineering activities, achievements of AI, and other aspects related to the work of a computer scientist - a specialist in the field of AI.

K1st\_K7: Student is ready to act responsibly in professional life, encourage and promote the suitable behavior patterns, correctly identify and solve the dilemmas related to the work of a computer scientist - a specialist in the field of AI.

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Formative assessment - the students need to participate in discussions (8 teamwork tasks = 40 points). Summary assessment: the students submit the written assignment related with the analysis of the selected concept of the inventive solution for IT and its business application (40 points). Students present the results of analysis and discuss the obtained results (20 points).

The points are summed up and a standard scale is used to derive the final marks: <50% - 2.0, [50% , 60%) - 3.0, [60% , 70%) - 3.5, [70% , 80%) - 4.0, [80% , 90%) - 4.5, and [90% , 100%] - 5.0.

Laboratory classes: Formative assessment - Student realized the following steps of the project which leads to the business plan for the start up company (60 points). Summary assessment: Student present the business plan (40 points).

## Programme content

As part of the course, students carry out projects in small teams to prepare a business plan for a startup implementing an innovative product proposed by the students in accordance with Bill Aulet's 24 steps methodology.

The lecture program includes the following topics:

1. introduction, among other things, the life cycle of a start-up, career paths of a computer scientist, presentation of opportunities offered by start-ups, sources of information, what events to participate in, information on start-up culture.
2. simple techniques and tools for innovative thinking. Exploration of ideas. Analysis and forecasting of market and technological trends. Selected methods and techniques for fostering creativity. Brainstorming sessions.
3. Lean Canvas concept. Analysis and segmentation of the market, selection of beachhead market, definition and description of persona.
4. Product design. Product quality criteria. Scope, purpose/benefits, target audience, product context, usage scenarios. Prototyping. Design thinking. Design heuristics. Focus studies, surveys. Case studies.
5. user behavior analytics. Data sources, e.g. Google Analytics.
6. Example business models. Revenue estimation. Variable and fixed costs. Margin and mark-up. Financial

planning and performance evaluation indicators. Financial liquidity. Profitability threshold.

7 Marketing. Promotion. Traditional and online advertising. CPM, CPC, CPA cost models. Social media. Examples of marketing communication channels (e.g. AdWords, Facebook). Conversion of promotional activities into shares and sales.

8 Investment. Sources of capital. Business angels, venture capital, public funds, stock markets, bonds, loans. Types of investments. Financial and strategic investors. Ways to exit an investment.

9. How to prepare for investment talks, what to pay attention to, how to negotiate, how to choose a good investor. Rational business decision-making. Risk analysis. Typical psychological mistakes.

10. Soft aspects of management. Motivating a team. Group cooperation and leadership.

11. legal aspects. Ways of conducting business. Types of companies. Formal obligations. Elements of accounting. Intellectual property. Protection of personal data. Patents.

12. business plan. Elevator pitch. Art of presentation. Investors onepager.

13. Case studies: detailed analysis of the history of selected companies. Big names (e.g. Google, Facebook). Large Polish start-up. Medium-sized Poznan start-up. Analysis of the most common mistakes. The lecture may include working meetings with an experienced entrepreneur or investor.

As part of the project, students prepare and present their own start-up idea using the knowledge and skills acquired in lectures and primary literature.

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## Teaching methods

Lecture: slide show presentations, presentations of case studies, discussions.

Laboratory classes: presentations, student's presentations, discussions, brain-storming.

## Bibliography

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4. Steve Jobs, Isaacson Walter, Insignis Wydawnictwo, 2011.
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6. Jaskiewicz A., Inżynieria oprogramowania, Helion, 1997.
7. Gadd K., TRIZ for Engineers, Wiley, 2014.
8. Majchrzak, J., Miądowicz, M., Network of Contradictions Analysis in Marketing Information Quality Management, In International TRIZ Future Conference (pp. 307-320). Springer, Cham, 2020.
9. Majchrzak J., Information quality management: a new method of contradiction modelling, Zeszyty Naukowe Politechniki Poznańskiej. Organizacja i Zarządzanie, No. 81, pp. 141-158, 2020.

### Breakdown of average student's workload

|   | Hours | ECTS |
|---|-------|------|
| Total workload  | 100   | 4,00 |
| Classes requiring direct contact with the teacher   | 60    | 2,50 |
| Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation) | 40    | 1,50 |