POZNAN UNIVERSITY OF TECHNOLOGY

B.Sc. Eng. Programmes

Artificial Intelligence

Programme description

Artificial Intelligence (AI) is oriented towards development and application of computational technologies that are inspired by the way people learn, reason, and make decisions. Since the field's inception sixty years ago, it has experienced different trends with an unpredictable rate of progress. Nowadays, AI research and technologies pervade our lives, having greatly influenced domains such as transportation, entertainment, home and service robotics, education, security, and healthcare. This is mainly due to the deluge of data and a remarkable success of the data-driven paradigm, which has displaced the traditional paradigms of AI.

Poznan University of Technology offers a B.Sc. Programme in Artificial Intelligence, which is pioneering in Poland. The seven-semester programme has been launched as a response to a growing demand for highly specialized AI experts on both Polish and international markets. The curriculum aims at providing graduates with an in-depth knowledge of computer sciences and mathematics needed for practical AI applications as well as an up-to-date knowledge of the latest AI trends. The classes are taught in English and delivered by the world-recognized scientists whose research in AI has been appreciated with the prestigious awards by international societies, journals, and conferences.

From the first semesters, the students get to know the elementary approaches of artificial intelligence, machine learning, and data analysis. The final two years are fully devoted to the hot areas of AI research. These include: big data and natural language processing, deep and reinforcement learning, computer vision, decision analysis and operational research, evolutionary computation, collaborative systems, Internet of things, and robotics. Apart from the knowledge of fundamental methods, the students gain interdisciplinary skills needed for building intelligent systems that can effectively collaborate with people as well as for applying these tools in different business sectors and domains oriented to consumers or society. The graduates are ready to work as computer programmers, data analysts, or machine learning engineers, and have sufficient knowledge to launch their own AI startups.

Course summary:

1st SEMESTER
- Introduction to mathematics for computer science
- Calculus I
- Introduction to artificial intelligence
- Discrete mathematics
- Introduction to programming
- Introduction to computing
- Artificial life with cognitive sciences
- English

2nd SEMESTER
- Linear algebra
- Introduction to probability
- Calculus II
- Computer architecture with low-level programming
- Algorithms and data structures
- Operating systems with concurrency programming
- English

3rd SEMESTER
- Statistics
- Elective 1: Information theory / Data compression methods
- Object programming
- Database systems
- Artificial intelligence
- Elective 2: Combinatorial optimization / Discrete optimization
- English
- Career resources

4th SEMESTER
- Software engineering
- Computer networks
- Machine learning
- Elective 3: Elements of convex optimization / Optimization methods for data analysis
- Data mining
- Elective 4: Data visualization / Graphics
- Robotics I
- English

5th SEMESTER
- Deep learning
- Internet applications
- Elective 5: Operational research/ Industrial engineering
- Information retrieval
- Innovative entrepreneurship
- Elective 6: Problem classes I: data analysis / artificial intelligence
- Elective 7: Computer vision / Signal processing

6th SEMESTER
- Natural language processing
- Elective 8: Decision analysis / Decision support
- Elective 9: Big data and distributed processing / Theory and practice of processing big data
- Elective 10: Reinforcement learning and multi-agent systems / Computational intelligence
- Robotics II
- Elective 11: Problem classes II: machine learning / artificial intelligence
- Ethics and research
- Methodology of writing scientific thesis
- Vocational internship (4 weeks)

7th SEMESTER
- Cybersecurity
- Elective 12: Semantic web and social networks / Man-machine interaction / Declarative programming and expert systems
- Elective 13: AI and games / Evolutionary computation
- Elective 14: Internet of things / Spiking neural networks
- Seminar
- Preparation for scientific research
- Diploma thesis preparation
- Bachelor's capstone project

POZNAN UNIVERSITY OF TECHNOLOGY

B.Sc. Eng. Programmes

Artificial Intelligence

University	Poznan University of Technology Poznan, POLAND
Degree to be obtained	Bachelor of Science, Eng.
Programme website	https://www.put.poznan.pl/en
Contact	International Relations Office Pl. M. Skłodowskiej-Curie 5 60-965 Poznan, Poland
Phone	+48 61 665 3544
Fax	+48 61 665 3956
E-mail	study@put.poznan.pl
Language of instruction	English
ETCS points	210
Duration	3.5 years (7 semesters)
Programme begins	end of September
Programme ends	end of February
Deadline for applications	middle of July
Education requirements	English language – level B2 (Common European Framework), Secondary school certificate which entitles its holder to apply to higher education institutions. Full list of the required documents is available at: https://www.put.poznan.pl/en
Mode of instruction	Lectures, classes, laboratory classes, projects, internships