Curriculum

Field of study: Solution Architecture

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Postgraduate study programme

Basic information

Faculty name:	Faculty of Computer Science
Field of study:	Solution Architecture
Level:	postgraduate
Number of ECTS credits necessary to complete studies at a given level:	37
Cycle start date:	2023/2024, winter semester
Duration of studies (number of semesters):	2

Recruitment conditions, including admission requirements

In order to enroll into program candidates must:
- have BS/MS diploma in engineering, IT, mathematics, or physics
- pass English test to confirm the required B2 level
- undergo the technical test and interview
- have experience with one of programming languages Java, JavaScript, .NET, Python.

Limit of admission to postgraduate studies along with an indication of the minimum number of people admitted, conditioning the launch of the edition of postgraduate studies

25 people (minimum 20)

Required documents and place of their submission

Required documents, i.e.

- application form;
- a copy of the university diploma certified by the University or the Diploma with the apostille for foreign students;
- confirmation of payment of the registration fee in the amount of PLN 500;
- confirmation of payment of the fee (or the first installment if approved by the head of the programm) for postgraduate studies for the first semester of studies, not later than within 14 days before starting the postgraduate studies should be submitted:
  - electronically by e-mail to siwik@agh.edu.pl
  - and physically to the Secretariat of the Institute of Computer Science
  AGH University of Science and Technology
  Kawiory 21 st., Mld. D-17, Room 2.7

General goals of education within postgraduate studies

The main goals of the studies is to learn and:

- have deep understanding of the Solution Architecture concepts and terminology
- know what insights should be taken into account during the creation of an IT architecture that will satisfy the client’s needs
- have clear understanding of the most significant, focus demanding and influential factors, which might affect the architecture
- understand the definitions of quality attributes, scenarios and their role in architectural decisions and be able to use them on practice
- be able to use the most efficient tools for Solution Architecture such as styles and patterns
- be able to use tools and best practices which can be used for architecture modeling
- have clear understanding of the methods used for effective and rational documentation of the architecture and be able to use them on practice
- be able to keep the development lifecycle in an efficient manner
- apply customer focused architecture and the entrepreneurial mindset to solve customer problems
- be able to select appropriate tools and technical skills to collect and analyze data from a variety of sources

- have grounded skills in using such tools as Jira, Miro, Git, Cloud, AWS, Power BI
- apply project management skills such as scheduling, budgeting, and resource management
- write technical project reports and give oral/multimedia presentations about their tasks
- work effectively as part of a team to develop and demonstrate team norms and critique team effectiveness through peer evaluation
- be able to identify their motivations, strengths, the entrepreneurial mindset, and contributions within the field of engineering and critique their own skills and understanding through self-reflection.

Postgraduate studies graduate profile

The graduate will be a person who:

- has deep understanding of the Solution Architecture concepts and terminology
- knows what insights should be taken into account during the creation of an IT architecture that will satisfy the client's needs
- has clear understanding of the most significant, focus demanding and influential factors, which might affect the architecture
- understands the definitions of quality attributes, scenarios and their role in architectural decisions and be able to use them on practice
- is able to use the most efficient tools for Solution Architecture such as styles and patterns
- is able to use tools and best practices which can be used for architecture modeling
- has clear understanding of the methods used for effective and rational documentation of the architecture and be able to use them on practice
- is able to keep the development lifecycle in an efficient manner
- applies customer focused architecture and the entrepreneurial mindset to solve customer problems
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Rules for completing postgraduate studies, including the rules of participation in classes, rules for controling classes and rules for taking exams, rules for crediting and registering for the next semester

Solution Architect is a two-semester postgraduate study. Program is run fully in English and fully in on-line mode.
This course combines lecture instructions with practical tasks and tasks done within the real project. Lecture hours will be provided in the form of self-paced digital materials to give the student ability to study individually in a reasonable and comfortable individual pace. The self-paced digital materials are provided in the form of text, video, and infographics to provide different channels of information absorption.
Practical tasks include use cases closely related to professional daily activities, which is required for the professional development. Participating in discussions, students can also involve in collaborative activities and get indirect instructions to solve the tasks. Students will get personalized feedback on their practice tasks. Courses include non-graded quizzes that focus students' attention on the key ideas in the theoretical information to increase the understanding by practice.
Final graded test and presentation of the project work results at the end of the course summarizes gained students' knowledge.
To complete the program student must:

- complete practical tasks
- complete project
- pass the final test

The duration rules and form of internships, including in particular the conditions for their implementation, the internship control system and their control (if required)

Solution Architect is a two-semester postgraduate study. Program consists of three main parts (Solution Architect Part I, Solution Architect Part II and Solution Architect - Project-based training) each of which lasts three months.

Conditions for completing postgraduate studies and obtaining a certificate of completion of postgraduate studies, including the conditions and requirements related to the preparation of final papers and the implementation of the diploma process, as well as related to the organization and course of the final exam (its scope, mode and manner of its conduct, rules for determining the exam grade) final, guidelines for its course), if required, the rules for determining the final result of their completion

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To complete the program student must:

- complete practical tasks
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- pass the final test

Learning outcomes

Field of study : Solution Architecture

Knowledge

KEU symbol	Learning outcomes prescribed to a field of study	CEU symbol
SASP_W01	Student knows and understands the Solution Architecture concepts and terminology	P6S_WG
SASP_W02	Student knows what insights should be considered during the creation of an IT architecture that will satisfy the client's needs	P6S_WG
SASP_W03	Student understands the most significant, focus demanding and influential factors, which might affect the architecture	P6S_WG
SASP_W04	Student understands the definitions of quality attributes, scenarios and their role in architectural decisions	P6S_WG
SASP_W05	Student knows Solution Architecture styles and patterns	P6S_WG
SASP_W06	Student knows tools and best practices which can be used for architecture modeling	P6S_WG
SASP_W07	Student understands the methods used for effective and rational documentation of the architecture	P6S_WG
SASP_W08	Student understands such technology domains as Cloud, Artificial Intelligence, NoSQL, Search and Blockchain	P6S_WG
SASP_W09	Student knows and understands pre-sale stage, pre-sale request categories, their major milestones, subphases, the scope of the solution architect's participation, and expected deliverables	P6S_WG
SASP_W10	Student knows and understands the main estimation technics and their advantages and disadvantages	P6S_WG
SASP_W11	Student understands the main areas of the solution architect's responsibility in software development process	P6S_WG
SASP_W12	Student knows how the solution architect should work with the front-end requirements and how they impact the deliverables	P6S_WG
SASP_W13	Student understands how to work with functional and non-functional requirements and examine the design and implementation processes	P6S_WG
SASP_W14	Student knows and understands the architecture design process in detail and knows how to use design check-list to build a successful solution	P6S_WG
SASP_W15	Student knows the architecture review process and Architecture Tradeoff Analysis Method (ATAM)	P6S_WG
SASP_W16	Student knows two architectural domains – Message Oriented Middleware and Cache	P6S_WG
SASP_W17	Student understands Message Oriented Middleware and its standards, message brokers, RabbitMQ, ZeroMQ and AWS Messaging	P6S_WG

Skills

KEU symbol	Learning outcomes prescribed to a field of study	CEU symbol
SASP_U01	Student is able to create an IT architecture satisfying the client's needs	P6S_UW
SASP_U02	Student is able to identify the most significant, focus demanding and influential factors, which might affect the architecture	P6S_UW

KEU symbol	Learning outcomes prescribed to a field of study	CEU symbol
SASP_U03	Student is able to apply and use quality attributes and scenarios while making the architectural decisions	P6S_UW
SASP_U04	Student is able to use in practice Solution Architecture styles and patterns	P6S_UW
SASP_U05	Student is able to use in practice appropriate tools and practices for architecture modeling	P6S_UW
SASP_U06	Student can work effectively and rationally on architecture’s documentation	P6S_UW
SASP_U07	Student can work effectively with such technology domains as Cloud, Artificial Intelligence, NoSQL, Search and Blockchain	P6S_UW
SASP_U08	Student can effectively work with different pre-sale request categories, their milestones, subphases, and solution architect’s deliverables	P6S_UW
SASP_U09	Student can use in practice different estimation approaches	P6S_UW
SASP_U10	Student can effectively work in practice on main areas of the solution architect’s responsibility including discovery, construction and transition of the software project development	P6S_UW
SASP_U11	Student is able to work effectively with front-end requirements	P6S_UW
SASP_U12	Student is able to effectively work with functional and non-functional requirements and verify the design and implementation processes	P6S_UW
SASP_U13	Student is able to use in practice design check-list to build a successful solution	P6S_UW
SASP_U14	Student is able to review the architecture and apply Architecture Tradeoff Analysis Method (ATAM)	P6S_UW
SASP_U15	Student is able to work with two architectural domains – Message Oriented Middleware and Cache	P6S_UW

Social competence

KEU symbol	Learning outcomes prescribed to a field of study	CEU symbol
SASP_K01	Student is ready for continuous expansion of their knowledge and skills in the field of Solution Architecture	P6S_KK
SASP_K02	Student is ready for critical assessment of own knowledge and new solutions and techniques in the field of Solution Architecture	P6S_KK
SASP_K03	Student is ready to use the acquired knowledge to achieve important goals for society or to conduct entrepreneurial activities	P6S_KO
SASP_K04	Student is ready to work in the compliance of the law and ethical principles in projects related to Solution Architecture	P6S_KR
SASP_K05	Student is ready to encourage culture of innovations in the organization	P6S_KR