GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Programming languages, PG_00045303
Field of study	Data Engineering

Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study
			Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	English
Semester of study	3	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Department of Algorithms and Systems Modelling -> Faculty of Electronics, Telecommunications and Informatics

Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Piotr Mironowicz
	Teachers	mgr inż. Tomasz Goluch
		dr hab. inż. Jan Daciuk
		dr inż. Piotr Mironowicz
		dr Magdalena Godlewska
		prof. dr hab. inż. Bogdan Wiszniewski

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						

Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
	Number of study hours	30	4.0	16.0	50

Subject objectives	The aim of the course is an introduction to popular programming paradigms and getting the skill of their practical implementations.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W05] Knows and understands programming models and evolution of related languages. Knows the methods of analysing and designing information systems and the modeling languages used in them, as well as the basic object-oriented programming platforms.	Student knows important (conceptually and historically) programming languages like Modula, Ada, Smalltalk, Haskell and Prolog.	[SW1] Assessment of factual knowledge
	[K6_U01] programs in procedural, object, functional and logic programming languages, codes programs at the processor instruction level, runs and tests programs.	Student is able to program in languages of paradigms: procedural and object (Modula, Smalltalk), functional (Haskell), and logics (Prolog).	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment

Subject contents	1. Procedural programming. 2. Linear syntax. FORTRAN 3. Activation records and subroutines 4. Recursive procedure call. 5. Block syntax. Control flow abstraction. 6. Binding of the names with objects. Range bonds. 7. The parameters of the procedure call. 8. Activation records for languages with recursion. 9. Static and dynamic calls. ALGOL. PASCAL. 10. Restrictions of block languages. 11. Abstraction of data and access protection. 12. Modularization. Modula-2. ADA83, ADA95 13. Exceptions. Exception handling models. 14. Concurrent procedures. Rendezvous. 15. Object-oriented programming. Objects, classes, hierarchies. 16. Dynamic types. Polymorphism. Smalltalk. C + +. 17. Recursive interpreted commands. 18. Symbolic transformation. Tail recursion. 19. Functional programming paradigm. 20. Haskell. Basic constructions and operations, module creation, performance. 21. Type classes in Haskell. 22. Tacit programming. 23. Functional constructions in Python, C++ and C#. 24. Prolog as an example of programming in logic. 25. Monads.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
tests	50.0%	40.0%
project	50.0%	60.0%

Recommended reading

Recommended reading	Basic literature	1. S. Mangano: XSLT receptury, wyd.2, Helion 2007 2. Cincom Smalltalk Downloads, http://www.cincomsmalltalk.com/ 3. SAXON - The XSLT and XQuery Processor, http://saxon.sourceforge.net/ 4. W.F. Clocksin, W.F., Mellish, C.S.: Prolog Programowanie. Helion 2003 5. Ada Programming, http://en.wikibooks.org/wiki/Ada 6. SWI-Prolog downloads, www.swi-prolog.org/download.html 7. ADA Core, the GNAT Pro Company, http://www.adacore.com/home, https://libre.adacore.com/ 8. D. S. Touretzky: Common Lisp: A Gentle Introduction to Symbolic Computation, http://www.cs.cmu.edu/~dst/LispBook/ 9. Z. Huzar, Z. Fryźlewicz, I. Dubielewicz, B. Hnatk: Ada 95, Helion 1998 10. Polski serwis języka Smalltalk, http://www.objectspace.net/
	Supplementary literature	http://en.wikipedia.org/wiki/Programming_paradigm
	eResources addresses	Adresy na platformie eNauczanie: Programming languages 24-25 - Moodle ID: 41569 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=41569
Example issues/ example questions/ tasks being completed		

Work placement	Not applicable

Document generated electronically. Does not require a seal or signature.