

## FACULTY OF ENGINEERING STUDY COURSE DESCRIPTION

Course odd (VAIS):       Information technologies         Study programme:       Ist level professional higher education         Level of Study programme:       Professional Bachelor         PhiD level       Professional Mater         PhiD level       Compulsory course (Part A)         Professional specialization courses (Part B, compulsory)       Professional specialization optional courses (Part B, optional)         Course Workload:       Credits       ECTS       Academic hours       Independent work hours         2       3       80       32       48         Course Workload:       Credits       ECTS       Academic hours       Independent work hours         2       3       80       32       48         Course Author/ Tutor:       Kaspars Osis       Kaspars Osis       Kaspars Osis         Course Form:       Full time       Year I, Semester I       Lawars of the course:       Year I, Semester I         Language:       Latvian, English       The aim of this course is to provide concise overview of programming area, theoretical and practical knowledge about programming basics including data types, control structures, algorithm development and usage of functions by focusing on Python seas for beginners to learn, it is widely used in many scientific areas for data exploration. The work within the course is done in small groups.         Course Summary:       Lectures, prac	Course Title:	INTRODUCTION TO PYTHON and DATA EXPLORATION							
Study programme:       Information technologies         Level of Study programme:       Information technologies         Professional Bachelor       Professional Bachelor         Professional Bachelor       Professional Bachelor         Phile Vet       Compulsory course (Part A)         Type of Study programme:       Professional specialization optional courses (Part B, compulsory)         Professional specialization optional courses (Part B, optional)       Independent Mork hours         Course Workload:       Credits       ECTS       Academic hours       Independent Mork hours         Assoc Prof. Dr.sc.ing.       Assoc Prof. Dr.sc.ing.       Assoc Prof. Dr.sc.ing.       Assoc Prof. Dr.sc.ing.         Study year, semester:       Year 1, Semester 1       Language:       Language:       Latvian. English         Prerequisites for the Course:       None.       None.       The aim of this course is to provide concise overview of programming area, theoretical and practical knowledge about programming basics including data types, control structures, algorithm development and usage of functions by focusing or Python is designents to learn, it widely used in many scientific areas for data exploration. The work within the course is done in small groups.         Course Summary:       Lectures, practical activities, group work, theory tests, final assessment (project work assignment) etc.         Assessment:       Lectures, practical activities, group work, theory tests, final asse	Course code (VAIS):								
Level of Study programme:       Ist level professional Bachelor         Professional Bachelor       Professional Bachelor         PhD level       Professional specialization courses (Part A)         Professional specialization optional courses (Part B, optional)       Professional specialization optional courses (Part B, optional)         Course Workload:       Credits       ECTS       Academic hours       Independent work hours         Course Author/ Tutor:       Assoc. Prof., Dr.sc.ing.       Kaspars osis @va.lv       Consultation: according to the schedule for each semester or per individual agreement.         Study gear, semester:       Year 1. Semester 1       Language:       Language:       Latvian, English         Prerequisites for the Course:       None.       The aim of this course is to provide concise overview of programming area, theoretical and practical knowledge about programming basics including data types, control structures, algorithm development and usage of functions by focusing on Python programming language. Python is designed to emphasize code readability. Even though Python is easy for beginners to learn, it is widely used in many scientific areas for data exploration. By performing practical assignments students with have an opportunity to gain and improve their practical skills in area of Python solutions development and data exploration. By performing practical advents with avea an opportunity to gain and improve their practical skills in area of Python solutions development and data exploration. The work within the course is done in small groups.         Course Methods:       Lectures, prac	Study programme:	Information technologies							
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Image: Professional Master         Image: Professional specialization courses (Part B, compulsory)         Course Workload:       2         2       3         80       32         48         Kaspars Osis         Assoc. Prof., Dr.sc.ing.         kaspars.osis@valv         Course Form:         Full time         Study year, semester:         Year J, Semester I         Language:         Latvian, English         Prerequisites for the Course:         None.         Course Summary:         Prython is casy for beginners to learn, it is widely used in many scientific areas for data exploration. By performing practical assignments students will have an opportunity to gain and improve their practical assignments students will have an opportunity to gain and improve their practical assignments students will have an opportunity to gain and improve their practical assignments students will have an opportunity to gain and improve their practical assignments students will have an	Level of Study programme:		Professi	onal Bachelor					
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Type of Study programme:       □ Consultation courses (Part A)         Professional specialization courses (Part B, optional)         □ Elective courses (Part C)         Course Workload:       □ Credits       ECTS       hours       Contact hours       Independent work hours         2       3       80       32       48         Kaspars Osis       Assoc. Prof. Dr.sc.ing.       Kaspars Osis       Assoc. Prof. Dr.sc.ing.         Course Form:       Full time       Consultation: according to the schedule for each semester or per individual agreement.         Course Form:       Full time       Consultation: according to the schedule for each semester or per individual agreement.         Course Form:       Full time       The aim of this course is to provide concise overview of programming area, theoretical and practical knowledge about programming basics including data types, control structures, algorithm development and usage of functions by focusing on Python programming language. Python is designed to emphasize code readability. Even though Python is easy for beginners to learn, it is widely used in many scientific areas for data exploration. By performing practical askills in area of Python solutions development and data exploration. The work within the course is done in small groups.         Course Methods:       Lectures, practical activities, group work, theory tests, final assessment (project work assignment) etc.         Assessment:       Examination (project work assignment)         1. Successful completion of w			PhD level						
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Assessment:       Examination (project work assignment)         Issues       1. Successful completion of workshops/practical work assignments (at least 60% points of totally available).         Requirements for Credits:       2. Passed theoretical tests.         Successful completion of project work assignment (at least 65% points of totally available).	Course Methods:	Lectures, practical activities, group work, theory tests, final assessment (project work assignment) etc.							
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Final assessment consists of: workshops/practical work assignments, group work evaluations; theoretical tests; project work assignment and project work assignment presentation.	Requirements for Credits:	<ol> <li>Successful completion of workshops/practical work assignments (at least 60% points of totally available).</li> <li>Passed theoretical tests.</li> <li>Successful completion of project work assignment (at least 65% points of totally available).</li> <li>Final assessment consists of: workshops/practical work assignments, group work evaluations; theoretical tests; project work assignment and project work assignment presentation.</li> </ol>							



	All practical work assignments have to be accepted (i.e. at least with 60	% evaluation) in
	order to get the final evaluation within this course. 250 points system is	used to come up
	with final evaluation. Table below lists totally available points for each a	ctivity.
	Work assignment or activity	Points
	Practical work assignments	90
	Derticipation in class work activities	30
	Project work assignment (avam)	100
	Project work assignment presentation (avam)	100
	Total	250
	10tai	250
	Final course evaluation (mark) calculation based on 250 points syste follows below:	em is done as it
	>-93% (232-points) - 10 $>-79%$ (197-points) - 6	
	> - 0.0% (2.32-points) = 10 $> - 7.0%$ (197-points) = 0	
	>= 90% (225 - points) = 9 >= 72% (180 - points) = 3	
	$>= \delta / \% (21 / - \text{points}) = \delta$ >= 65% (162- points) = 4	
	>= 83% (20/- points) = 7 < 65% (162- points) = 3	
	Missing practical work assignment deadline: each missed day counts f 5% from totally available points. It is required to acquire at least 6 available points (not counting potential delay) in order to accept assignment as done.	or subtraction of 0% from totally practical work
Abiding by the Academic Ethics	<ul> <li>Students must abide by the academic and research ethics, Vidzeme Univ Sciences Ethics Regulations, incl.:</li> <li>study papers must be independently developed;</li> <li>the study work should reference all statements, ideas and data use authored by someone else;</li> <li>appropriate data acquisition methods should be used in the acquis research ethics must be respected, empirical data must be collecte and cannot be distorted or falsified;</li> <li>the examination must be carried out by the student independently, w supporting materials and/or consultations with other students, un states otherwise.</li> <li>In the event of non-compliance with the academic and research ethic imposed in accordance with the ViA Ethics Regulations and the study contaken, unless the punishment is extramarital.</li> </ul>	ersity of Applied d that have been ition of data, the ed independently without the use of iless the lecturer s, punishment is purse must be re-
Course Contents:	<ul> <li>Introduction in course and programming.</li> <li>Introduction in Python, environment and basics.</li> <li>Development of first application.</li> <li>Variables, expressions and statements.</li> <li>Conditional execution.</li> <li>Functions and usage.</li> <li>Loops and iterations.</li> <li>String data type, usage, operations.</li> <li>Work with files.</li> <li>Regular expressions.</li> <li>Data structures – lists, dictionaries, tuples.</li> <li>Introduction to network, protocols. Characters and strings, their types.</li> <li>Web scraping.</li> <li>Introduction to web services.</li> <li>Python objects and SQLite.</li> </ul>	



	Learning Outcomes	The evaluation methods and criteria			
	Knowledge				
	Knowledge on programming, its actuality, usage, and in particular about Python environment and basics.	Development of particular programming solution concept. Passed theoretical test.			
	Knowledge on Python solutions types and data persistence options.	Development of particular programming solution concept. Passed theoretical test.			
	Knowledge regarding network based data acquisition, its types and application areas.	Development of particular programming solution concept. Passed theoretical test.			
Learning Outcomost the	Skills				
Learning Outcomes; the evaluation methods and criteria	To develop Python solution with beginning complexity.	Developed practical group work.			
	To develop Python solution using file and SQLite functionality.	Developed practical group work.			
	To develop Python solution using several types of data structures for data acquisition, storage and processing.	Developed practical group work.			
	Competency				
	Able to use correct Python solutions terminology and to choose appropriate technological approaches for particular assignment implementation.	Course project development and presentation.			
	Able independently to perform Python solutions development initial design and architecture.	Course project development and presentation.			
	Able to solve Python solutions basic issues, to perform testing and debugging activities.	Course project development and presentation.			
Course Compulsory literature:	<ol> <li>K. A. Lambert. Fundamentals of Python: First Programs 2nd edition, Cengage Learning Custom Publishing, 2017.</li> <li>Ch. Severance. Python for Everybody: Exploring Data in Python 3, Createspace Independent Publishing Platform, 2016.</li> </ol>				
Course additional literature:	1. W. McKinney. Python for Data Analysis, 2e: Data Wrangling with Pandas, NumPy, and IPython 2nd edition, O'Reilly Media, Inc., 2017.				
Course confirmation date:					
Date of course description update:					

## VIDZEME UNIVERSITY OF APPLIED SCIENCES

		Acader	nic hours	
Date Theme		Contact Independent		Study Form
		hours	work hours	
The date is specified before the implementati on of the course	Introduction in course and programming. Introduction in Python, environment and basics. Development of first application.	4	2	Theoretical lecture. Several topics covering practical work. Group work.
	Variables, expressions and statements. Conditional execution.	4	4	Theoretical lecture. Several topics covering practical work. Group work
	Functions and usage. Loops and iterations.	4	4	Theoretical lecture. Several topics covering practical work. Group work
	String data type, usage, operations. Work with files. Regular expressions.	4	5	Theoretical lecture. Several topics covering practical work. Group work
	Data structures – lists, dictionaries, tuples.	4	5	Theoretical lecture. Several topics covering practical work. Group work
	Introduction to network, protocols. Characters and strings, their types. Web scraping. Introduction to web services.	4	5	Theoretical lecture. Several topics covering practical work. Group work
	Python objects and SQLite.	4	5	Theoretical lecture. Several topics covering practical work. Group work
	Final examination	4	18	Course project development and presentation.
<b>TT</b>		21	10	
	Hours total:	32	40	

## **Study Course Plan:**

Note: lecturer keeps the rights to make changes in the course plan.