

**Subject card**

<b>Subject name and code</b>		Web services, PG_00148525						
<b>Field of study</b>		Bioinformatics						
<b>Date of commencement of studies</b>		October 2024	<b>Academic year of realisation of subject</b>			2026/2027		
<b>Education level</b>		Bachelor's studies	<b>Subject group</b>			Optional subject group		
<b>Mode of study</b>		full-time studies	<b>Mode of delivery</b>			e-learning		
<b>Year of study</b>		3	<b>Language of instruction</b>			Polish Some of the resources used (e.g. manuals for some programs) are available in English only.		
<b>Semester of study</b>		5	<b>ECTS credits</b>			3.0		
<b>Learning profile</b>		academic	<b>Assessment form</b>					
<b>Conducting unit</b>		Laboratory of Carbohydrate Chemistry -> Department of Organic Chemistry -> Faculty of Chemistry -> Rector						
<b>Name and surname of lecturer (lecturers)</b>		<b>Subject supervisor</b>		dr hab. Rafał Ślusarz				
		<b>Teachers</b>						
<b>Lesson types</b>		<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
		<b>Number of study hours</b>	0.0	0.0	30.0	0.0	0.0	30
		E-learning hours included: 30.0						
		Additional information: <ul style="list-style-type: none"> <li>exercises carried out in any computer lab</li> <li>own work - completion of projects using own hardware resources (desktop computer, laptop, tablet, smartphone)</li> </ul>						
<b>Learning activity and number of study hours</b>		<b>Learning activity</b>	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM		
		<b>Number of study hours</b>	30	0.0	0.0	30		
<b>Subject objectives</b>		Mastering techniques and tools using publicly available network services (resource sharing, cryptography elements, bioinformatics servers, identification and location services).						
<b>Learning outcomes</b>		<b>Course outcome</b>	<b>Subject outcome</b>			<b>Method of verification</b>		
		[BIOINL3_W01] Has knowledge of computer science technologies, with particular emphasis on programming	student defines network services and distinguishes between network services and local services; names the components of services; characterizes the levels of security of access to services at the transmission and storage stages; explains the rules for accessing, distributing and modifying services.			[SW3] text preparation/written work		
		[BIOINL3_U01] Graduate is able to program using modern programming tools, including tools dedicated to bioinformatics	student detects available network services; identifies the network services found; chooses how to access and use network services; plans the use of available services to solve the problems posed; anticipates the possibility of service compromise and chooses how to prevent it; constructs correct queries to bioinformatics service servers			[SU2] presentation/project/paper/report		

Subject contents	<ul style="list-style-type: none"> <li>• Operating selected tools and servers from the command line.</li> <li>• Transmission and storage of data on remote servers.</li> <li>• Online processing of information using bioinformatics databases.</li> <li>• Searching and using publicly available web services and advanced web services.</li> </ul>								
Prerequisites and co-requisites	<p>Formal requirements:</p> <ul style="list-style-type: none"> <li>• Passed subject: <i>Introduction to Computer Science, Information Technology</i> or related course.</li> </ul> <p>Prerequisites:</p> <ul style="list-style-type: none"> <li>• proficiency in the use of general and specialized Internet search engines,</li> <li>• basic knowledge of English,</li> <li>• ability to install software in any available operating system,</li> <li>• ability to operate programs without a graphical user interface.</li> </ul>								
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="451 461 798 495">Subject passing criteria</th> <th data-bbox="805 461 1141 495">Passing threshold</th> <th data-bbox="1149 461 1477 495">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 499 798 629">student prepares a report for each exercise performed; each such report is assessed separately; the final grade is the arithmetic mean of the partial grades obtained</td> <td data-bbox="805 499 1141 629">51.0%</td> <td data-bbox="1149 499 1477 629">100.0%</td> </tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	student prepares a report for each exercise performed; each such report is assessed separately; the final grade is the arithmetic mean of the partial grades obtained	51.0%	100.0%		
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Recommended reading	<table border="1"> <tr> <td data-bbox="451 633 798 667">Basic literature</td> <td data-bbox="805 633 1477 667">none</td> </tr> <tr> <td data-bbox="451 669 798 703">Supplementary literature</td> <td data-bbox="805 669 1477 703">none</td> </tr> <tr> <td data-bbox="451 705 798 792">eResources addresses</td> <td data-bbox="805 705 1477 792">           Adresy na platformie eNauczanie:            Usługi Sieciowe - Bioinformatyka - Moodle ID: 1739  <a href="https://mdl.ug.edu.pl/course/view.php?id=1739">https://mdl.ug.edu.pl/course/view.php?id=1739</a> </td> </tr> </table>	Basic literature	none	Supplementary literature	none	eResources addresses	Adresy na platformie eNauczanie: Usługi Sieciowe - Bioinformatyka - Moodle ID: 1739 <a href="https://mdl.ug.edu.pl/course/view.php?id=1739">https://mdl.ug.edu.pl/course/view.php?id=1739</a>		
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Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> <li>• identify the ports open on the machine with the indicated IPv4 address</li> <li>• prepare a full-atom representation of the M3 muscarinic receptor</li> <li>• encrypt a message with the indicated content using GPG</li> </ul>								
Work placement	Not applicable								

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