Table 1.1.5 – Learning Outcome Matrix – Modules to EP BA 60610600 – Software Engineering

Learning Outcomes (critical units of competence)	Name module	
LO 2. Able to making decisions informed by philosophical and historical knowledge, techniques of discussion and debate. An ability to function effectively on a team whose members together provide leadership	HUM101	The latest History of Uzbekistan
LO 2. Able to making decisions informed by philosophical and historical knowledge, techniques of discussion and debate. An ability to function effectively on a team whose members together provide leadership	HUM102	Religious studies
LO 2. Able to making decisions informed by philosophical and historical knowledge, techniques of discussion and debate. An ability to function effectively on a team whose members together provide leadership	HUM103	Philosophy
LO 1. Able to communicate effectively with a range of audience and competently express oneself in Uzbek, Russian, and other foreign languages.	FRL101	Foreign language I
LO 1. Able to communicate effectively with a range of audience and competently express oneself in Uzbek, Russian, and other foreign languages.	FRL102	Foreign language II
LO 5. Able to apply foundational and advanced knowledge in the fields of mathematics, natural sciences, and technical sciences to complex engineering tasks, utilizing the latest scientific advancements to solve computational problems.	MTH101	Calculus
LO 5. Able to apply foundational and advanced knowledge in the fields of mathematics, natural sciences, and technical sciences to complex engineering tasks, utilizing the latest scientific advancements to solve computational problems.	PHY101	Physics I
LO 5. Able to apply foundational and advanced knowledge in the fields of mathematics, natural sciences, and technical sciences to complex engineering tasks, utilizing the latest scientific advancements to solve computational problems.	PHY101	Physics II
LO 5. Able to apply foundational and advanced knowledge in the fields of mathematics, natural sciences, and technical sciences to complex engineering tasks, utilizing the latest scientific advancements to solve computational problems.	MTH102	Differential equations
LO 5. Able to apply foundational and advanced knowledge in the fields of mathematics, natural sciences, and technical sciences to complex engineering tasks, utilizing the latest scientific advancements to solve computational problems.	MTH103	Discrete structures
LO 6. Able to design computer systems and their components using modern programming languages.	PRG101	Programming I
LO 6. Able to design computer systems and their components using modern programming languages.	PRG102	Programming II
LO 1. Able to communicate effectively with a range of audience and competently express oneself in Uzbek, Russian, and other foreign languages.	AWR101	Academic writing

Learning Outcomes (critical units of competence)		Name module
LO 7. Able to design, implement, and manage database systems, ensuring data integrity.	DBM201	Databases
LO 8. Able to implement cybersecurity measures and understand the principles of cryptography and network security.	CSF201	Fundamentals of Cyber Security
LO 9. Able to analyze and design efficient algorithms and data structures to solve computational problems.	DSA201	Data structure and algorithms
LO 10. Able to design, implement, and analyze and to understand the design and functioning of computer hardware, including processors, memory, and I/O devices, digital systems using hardware description languages and tools.	EAC 201	Electronics and circuits
LO 10. Able to design, implement, and analyze and to understand the design and functioning of computer hardware, including processors, memory, and I/O devices, digital systems using hardware description languages and tools.	CAO201	Computer organization
LO 12. Able to design computer networks and data communication, including protocols, topologies, and to understand OSI model.	NWK201	Computer networks
LO 6. Able to develop proficiency and design computer systems and their components using modern programming languages.	WAC201	Create web applications
LO 13. Able to identify, formulate, and solve complex software engineering problems by applying principles of engineering, science, and mathematics.	ISE201	Introduction to software engineering
LO 5. Able to apply foundational and advanced knowledge in the fields of mathematics, natural sciences, and technical sciences to complex engineering tasks, utilizing the latest scientific advancements to solve computational problems.	MTH204	Probability and statsictics
LO 17. Able to use the principles of object-oriented software design: abstraction, encapsulation, inheritance, polymorphism, testing methodolgies.	PMP301	Programming Methods and Paradigms
LO 17. Able to use the principles of object-oriented software design: abstraction, encapsulation, inheritance, polymorphism, testing methodolgies.	SOT301	Software Testing
LO 11. Able to demonstrate knowledge of operating systems concepts, including process management, memory management, and file systems.	OPS301	Operating systems
LO 19. Able to articulate software requirements and functionality in a form that is understandable to end users and other stakeholders.	SQA301	Software Quality Assurance
LO 14. Able to design software systems and their components using modern programming languages and UML-diagrams with a complete description of the software tool development process.	MAD301	Mobile Application Development
LO 15. Able to design and implement APIs using object-oriented language and extended libraries when working on small projects.	DSS401	Design of Software Systems
LO 20. Able to apply knowledge in the field of engineering in practice and effectively use engineering knowledge when conducting qualifying training and processing the results of experiments and drawing valid conclusions based on them.	IDP361	Individual project

Learning Outcomes (critical units of competence)		Name module
LO 4. Able to making decisions informed by health, safety, and workplace dynamics, utilizing methods to ensure the safety of social systems to preserve, develop, and enhance the effective functioning of individuals and society.	PHT101	Physical Training
LO 3. Able to making decisions informed by principles of engineering psychology, pedagogy and ecology.	GEN301	Pedagogy. Psychology
LO 3. Able to making decisions informed by principles of engineering psychology, pedagogy and ecology.	GEN302	Ecology
LO 4. Able to making decisions informed by health, safety, and workplace dynamics, utilizing methods to ensure the safety of social systems to preserve, develop, and enhance the effective functioning of individuals and society.	GEN303	Power supply of information communication systems
LO 4. Able to making decisions informed by health, safety, and workplace dynamics, utilizing methods to ensure the safety of social systems to preserve, develop, and enhance the effective functioning of individuals and society.	GEN304	Life safety
LO 13. Able to identify, formulate, and solve complex software engineering problems by applying principles of engineering, science, and mathematics.	ITS201	Introduction to Computational Thinking and Programming
LO 14. Able to design software systems and their components using modern programming languages and UML-diagrams with a complete description of the software tool development process.	ITS202	Introduction to Programming with Python
LO 16. Able to design and implement programming skills using object-oriented language and extended libraries when working on small projects.	ITS303	Construction of compilers
LO 19. Able to articulate software requirements and functionality in a form that is understandable to end users and other stakeholders.	ITS304	Software construction and evolution
LO 13. Able to identify, formulate, and solve complex software engineering problems by applying principles of engineering, science, and mathematics.	ITS305	Introduction to game theory
LO 13. Able to identify, formulate, and solve complex software engineering problems by applying principles of engineering, science, and mathematics.	ITS306	Digital Image Processing
LO 13. Able to identify, formulate, and solve complex software engineering problems by applying principles of engineering, science, and mathematics.	ITS407	Real time systems
LO 14. Able to design software systems and their components using modern programming languages and UML-diagrams with a complete description of the software tool development process.	ITS408	Software Architecture
LO 13. Able to identify, formulate, and solve complex software engineering problems by applying principles of engineering, science, and mathematics.	ITS409	Pattern recognition
LO 19. Able to articulate software requirements and functionality in a form that is understandable to end users and other stakeholders.	ITS410	Data preprocessing technologies

Learning Outcomes (critical units of competence)		Name module
LO 18. Able to identify CASE tools and software development environments, including various frameworks database systems.	ITS411	Programming in MATLAB
LO 17. Able to use the principles of object-oriented software design: abstraction, encapsulation, inheritance, polymorphism testing methodolgies.	ITS412	Optimization and development of web application
LO 15. Able to design and implement APIs using object-oriented language and extended libraries when working on small projects.	ITS413	System programming
LO 18. Able to identify CASE tools and software development environments, including various frameworks database systems.	ITS414	SQL programming
LO 13. Able to identify, formulate, and solve complex software engineering problems by applying principles of engineering, science, and mathematics.	ITS415	Intelligent and expert systems
LO 18. Able to identify CASE tools and software development environments, including various frameworks database systems.	ITS416	Knowledge based systems
LO 16. Able to design and implement programming skills using object-oriented language and extended libraries when working on small projects.	ITS417	Fundamentals of Action Research
LO 15. Able to design and implement APIs using object-oriented language and extended libraries when working on small projects.	ITS418	Software requirements analysis
LO 20. Able to apply knowledge in the field of engineering in practice and effectively use engineering knowledge when conducting qualifying training and processing the results of experiments and drawing valid conclusions based on them.	QPR301	Practical Training
LO 20. Able to apply knowledge in the field of engineering in practice and effectively use engineering knowledge when conducting qualifying training and processing the results of experiments and drawing valid conclusions based on them.	QPR 402	Pre-graduation work practice
LO 20. Able to apply knowledge in the field of engineering in practice and effectively use engineering knowledge when conducting qualifying training and processing the results of experiments and drawing valid conclusions based on them.	GQW401	Graduation Qualification Work