

School of Informatics and Engineering

Bachelor's Program in Informatics

Curriculum

	Course Code	Course	Prerequisite	Semester	ECTS Credits	Hour		
						Contact	Independent	Total
	Learning Component Amount of Credits 240							
	Compulsory Learning Courses and Components Appropriate for Basic Studying Sphere – 132 credits							
1	NS&EC 301	Introduction to the specialization	N/A	I	4	34	66	100
2	NS&EC 204	Algorithmics and data structures (Python)	N/A	I	6	51	99	150
3	NS&EC 302	Fundamentals of information technologies	N/A	I	4	34	66	100
4	NS&EC 403	Computer raster graphics (Adobe Photo Shop)	N/A	I	4	34	66	100
5	NS&EC 911	Fundamental of computer architecture	N/A	I	4	34	66	100
6	NS&E 203	Discrete maths 1	N/A	I	4	34	66	100
		Subject from the compulsory courses of the free component		I	4	34	66	100
7	NS&EC 410	Web technologies (HTML_CSS)	N/A	II	4	34	66	100
8	NS&EC 903	Fundamentals of programming (Python)	NS&EC 204	II	6	51	99	150
9	NS&EC 206	Linear algebra and analytical geometry	N/A	II	4	34	66	100
10	NS&EC 603	Database management systems 1	N/A	II	4	34	66	100
11	NS&EC 402	Graphic fundamentals of web design	NS&EC 403	II	4	34	66	100

12	NS&EC 604	Fundamentals of operational systems (Windows, Linux)	NS&EC 911	II	4	34	66	100
		Subject from the compulsory courses of the free component		II	4	34	66	100
13	NS&EC 411	Web technologies (JavaScript, jQuery)	NS&EC 410, 903	III	6	51	99	150
14	NS&EC 804	Programming language C#	NS&EC 903	III	4	34	66	100
15	NS&EC 608	Database management systems 2	NS&EC 603	III	4	34	66	100
16	NS&EC 201	Calculus	N/A	III	4	34	66	100
		Subject from the compulsory courses of the free component		III	4	34	66	100
		Subjects from selective study courses		III	8			
17	NS&EC 412	Web technologies (PHP_MYSQL)	NS&EC 411 & 603	IV	6	51	99	150
18	NS&EC 610	Operational system security	NS&EC 604	IV	4	34	66	100
19	NS&EC 805	Fundamentals of R programming	N/A		4	34	66	100
		Subjects from selective study courses		IV	12			
		Subject from the selective courses of the free component		IV	4			
20	NS&EC 705	ვებ-აპლიკაციების აგება Framework-ის გამოყენებით	NS&EC 412	V	4	34	66	100
21	NS&EC 304	კომპიუტერული ქსელების საფუძვლები	N/A	V	4	34	66	100
22	NS&EC 207	ალბათობის თეორია	NS&EC 203	V	4	34	66	100
		Subjects from selective study courses		V	14			
		Subject from the selective courses of the free component		V	4	34	66	100
23	NS&EC 906	დაპროგრამება JVM-ს პლატფორმაზე	NS&EC 903, 412	VI	4	34	66	100
24	NS&EC 409	კიბერ უსაფრთხოება, დაცვა და შეტევა	NS&EC 304	VI	6	51	99	150
25	NS&EC 611	ინფორმაციული სისტემების საფუძვლები	N/A	VI	4	34	66	100

26	NS&EC 202	გამოყენებითი სტატისტიკა	NS&EC 207, 805	VI	4	34	66	100
		Subjects from selective study courses		VI	8			
		Subject from the selective courses of the free component		VI	4	34	66	100
27	NS&EC 413	კრიპტოგრაფიის საფუძვლები	N/A	VII	4	34	66	100
28	NS&EC 921	ვებ პლატფორმაზე დაფუძნებული დეველოპმენტი (Django)	NS&EC 411, 903	VII	6	51	99	150
29	NS&EC 508	IT პროექტების მენეჯმენტი	N/A	VII	4	34	66	100
		Subjects from selective study courses		VII	12			
		Subject from the selective courses of the free component		VII	4	34	66	100
30	GEO 047	Academic writing and stylistics	N/A	VIII	4	34	66	100
Practical Component - 6 Credits								
31	NS&EC 702	Practical use of computer technologies	168 Credits	VIII	6	51	174	225
Research Component – 20 Credits								
32	NS&EC 901	Bachelor's qualification project (w presentation)	168 Credits	VIII	20	51	449	500
Selective study courses appropriate for the learning sphere – required to earn 54 credits								
Selectives 1								
33	NS&EC 920	Algorithmics and data structures (advanced)	NS&EC 204, 903	III	4	34	66	100
34	NS&EC 609	Fundamentals of cloud computing	NS&EC 603, 608	III	4	34	66	100
35	NS&EC 905	დაპროგრამების ენა C# (Advance - ADO.NET, Entity Framework, LINQ)	NS&EC 804, 910	IV	4	34	66	100
36	NS&EC 205	Discrete maths 2	NS&EC 203	IV	4	34	66	100

37	NS&EC 611	Design and management of business processes	N/A	IV	4	34	66	100
38	NS&EC 209	Fundamentals of machine learning	N/A	V	6	51	99	150
39	NS&EC 935	Web development technology (Angular)	NS&EC 411	V	4	34	66	100
40	NS&EC 704	Web optimization (SEO)	NS&EC 410	V	4	34	66	100
41	NS&EC 806	Data analysis using R programming	NS&EC 805	VI	4	34	66	100
42	NS&EC 933	Web development technology (React)	N/A	VI	4	34	66	100
43	NS&EC 904	Web services (WCF, Web API)	NS&EC 905	VI	4	34	66	100
44	NS&EC 701	Web based development (ASP.NET MVC)	NS&EC 411, 904	VII	4	34	466	100
45	NS&EC 414	Funamentals of information flow management	NS&EC 304, 409	VII	4	34	99	100
46	NS&EC 510	Business analysis	NS&EC 611	VII	4	34	99	100
Selectives 2								
50	NS&EC 404	Computer vector graphics (Adobe Illustrator)	N/A	III	4	34	66	100
53	NS&E 303	Multimedia systems	N/A	IV	4	34	66	100
54	NS&EC 405	Computer graphics Indesign	N/A	IV	4	34	66	100
55	NS&EC 907	Computer graphics After Effect, level 1	NS&EC 403	V	6	51	99	150
56	NS&EC 406	Computer modeling and animation (3D MAX)	N/A	V	4	34	66	100
58	NS&EC 908	Computer graphics After Effect, level 2	NS&EC 907	VI	4	34	66	100

59	NS&EC 605	Computer modeling and rendering	NS&EC 406	VI	4	34	66	100
61	NS&EC 509	Multimedia project management	N/A	VII	4	34	66	100
Mandatory Courses of the Free Component – required to earn 12 credits								
65	NS&EC 101	Technical English 1	N/A	I	4	34	66	100
66	NS&EC 102	Technical English 2	NS&EC 101	II	4	34	66	100
67	NS&EC 103	Technical English 3	NS&EC 102	III	4	34	66	100
Optional Courses of the Free Component – required to earn 16 credits								
68	NS&EC 104	Technical English 4	NS&EC 103	IV-VII	4	34	66	100
69	NS&EC 113	Fundamentals of applied psychology	N/A	IV-VII	4	34	66	100
70	NS&EC 418	Creative technologies in design	N/A	IV-VII	4	34	66	100
71	BBACI 604	Fundamentals of management	N/A	IV-VII	4	34	66	100
72	BBACI 207	Fundamentals of business communications	N/A	IV-VII	4	34	66	100
73	NS&EC 416	Fundamentals of composition and colour theory	N/A	IV-VII	4	34	66	100
74	NS&EC 913	Fundamentals of photo design	N/A	IV-VII	4	34	66	100
75	NS&EC 930	Sound design and audio packaging of advertising products	N/A	IV-VII	4	34	66	100
76	NS&EC 601	Electronic systems in education and science	N/A	IV-VII	4	34	66	100
77	NS&EC 710	Fundamentals of dramaturgy - script and publication - the art of storytelling	N/A	IV-VII	4	34	66	100
78	NS&EC 934	Advertising technologists and strategic communication	N/A	IV-VII	4	34	66	100
79	NS&EC 914	Artistic photography	N/A	IV-VII	4	34	66	100
80	NS&EC 932	Copywriting	N/A	IV-VII	4	34	66	100
81	NS&EC 501	Fundamentals of graphic design for advertising	N/A	IV-VII	4	34	66	100
82	NS&EC 419	Visual communication in graphic design	N/A	IV-VII	4	34	66	100

83	BBACI 605	Fundamentals of organizational behaviour	N/A	IV-VII	4	34	66	100
84	BBAEI 507	Fundamentals of strategic management of brand	N/A	IV-VII	4	34	66	100
85	BBAEI 607	Principles of leadership	N/A	IV-VII	4	34	66	100
86	BBAEI 618	Fundamentals of innovative and creative management	N/A	IV-VII	4	34	66	100
87	BBAEI 621	Fundamentals of negotiations	N/A	IV-VII	4	34	66	100
88	NS&EC 208	Fundamentals of relationship psychology	N/A	IV-VII	4	34	66	100
89		within the framework of any educational program of the first level		IV-VII	12			

Map of goals and results

#	Program Goals	Program Result
1	To study a wide field of informatics, which includes critical understanding of theories and principles, creation, development and analysis of software and applications, design of computer environment and methods of its development;	Has extensive knowledge in the field of informatics, masters the basic theories and principles of algorithms, information technology, programming technologies, multimedia and web technologies; In addition, he/she knows how to operate two- and three-dimensional systems of computer graphics, animation and design;
2	Learn the basic methods of computer technology, the widespread use of these methods in the creation and management of IT projects;	Is able to manage projects and general management and marketing of communication technologies and systems; Creates, develops and analyzes software products and applications; Can create interdisciplinary interactive projects; Carries out modeling, visualization and animation modeling of various physical, engineering and technological processes;

		Can create a product according to pre-defined instructions, analyze the data and/or situations, formulate a reasoned conclusion;
3.	Examine the terms and conditions of work on the project or part of it (planning, drafting, updating, explanation, presentation, etc.);	Formulates the goal and objectives of the project in the field of information technologies, collects, analyzes and processes conceptual data, determines the necessary human and technical resources, establishes the relationship between the results; Finds relevant information and creatively solves the tasks of programming, use and introduction of multimedia technologies in various fields; Discusses with specialists and non-specialists their own ideas in the field of information technologies, existing problems and ways to solve them in a manner appropriate to the context;
4.	Develop the ability to work on a research paper in accordance with pre-defined guidelines;	Formulates the goal and objectives of the project in the field of information technologies, collects, analyzes and processes conceptual data, determines the necessary human and technical resources, establishes the relationship between the results;
5.	Develop professional ethics and professional courage and the ability to act within it.	Has organizational skills, can take and implement initiatives, take responsibility for it. Keeps track of practice, science news and constantly updates knowledge. Adheres to the principles of ethics, independently plans and carries out complex tasks in the field of programming and design, takes responsibility for it; Identifies its own further learning needs and implements with a high degree of independence.

Map of learning outcomes

#	Code	Courses	1	2	3	4	5	6	7	8
1	NS&EC 301	Introduction to Specialty: Basics of informatics and Multimedia Technologies	1							
2	NS&EC 204	Algorithmics and Data Structures (Python)	1		1	1				1
3	NS&EC 302	Fundamentals of Information Technology	1							
4	NS&EC 403	Computer Raster Graphics (Adobe Photoshop)	1		1		1	1		1
5	NS&EC 416	Fundamentals of Composition and Theory of Colors		1		1				
6	NS&E 201	Calculus	1			1				
7	NS&EC 410	Web Technologies (HTML, CSS)	1	1		1	1		1	1
8	NS&EC 903	Fundamentals of Programming (Python)	1			1		1		1
9	NS&EC 604	Operating Systems			1		1		1	
10	NS&EC 402	Graphic Basics of Web Design	1	1		1				1
11	NS&EC 206	Linear Algebra and Analytic	1				1			
12	NS&EC 411	Linear Algebra and Analytic		1		1	1		1	1

13	NS&EC 603	Database Architecture	1			1	1			1
14	NS&E 203	Discrete Mathematics	1			1				
15	NS&EC 412	Web Technologies (PHP-MySQL)		1	1	1	1	1	1	1
16	NS&EC 205	Discrete Mathematics (Advanced Course)	2		2				2	
17	NS&EC 705	Build Web Applications using „.NET Framework”		2		2	2		2	2
18	NS&EC 304	Basics of Computer Networks			2		2		2	
19	NS&EC 805	R-Programming		2		2	2	2	2	
20	NS&EC 207	Probability Theory	2		2				2	
21	NS&EC 906	Programming on JVM Platform	2			2				2
22	NS&EC 409	Information System Security		2		2	2		2	
23	NS&EC 919	Fundamentals of Computer Game Development (Unreal Engine 4)	2		2			2		2
24	NS&EC 202	Applied Statistics	2							2
25	NS&EC 704	Web Optimization and Marketing	3		3			3		3
26	NS&EC 915	Computer Game Development (Advanced Course)	3	3		3		3		3
27	GEO 047	Academic Writing and Stylistics				3		3		3
28	NS&EC 702	Practical Applications of Computer Technologies (Practical Course)	3	3	3	3	3	3	3	3
29	NS&EC 901	Final Project	3	3	3	3	3	3	3	3
30	NS&E 101	Technical English I					1	1		2
31	NS&E 102	Technical English II					2	2		
32	NS&E 103	Technical English III					2	2	2	2
33	NS&E 104	Technical English VI					3	3	3	3
34	NS&EC 801	Programming Language C++	2			2		2		2
35	NS&EC 911	Computer Architecture	2		2	2			2	2
36	NS&EC 920	Algorithmics and Data Structures (Advanced Course)	2	2	2		2	2		
37	NS&EC 804	Programming Language C++	2		2	2	2			
38	NS&EC 910	Database Management Systems (Ms-SQL)	3			3		3		3
39	NS&EC 905	Programming Language C++ (Advanced Course, ADO.NET, Entity Framework, LINQ)	3	3	3		3	3		

40	NS&EC 209	Basics of Machine Learning	2	2		2	2		2	
41	NS&EC 909	Server Technologies	2							2
42	NS&EC 904	Web Service Project Creation (WCP, Web API)	2	2	2		2	2		
43	NS&EC 806	Data analysis using R programming	3	3		3	3		3	
44	NS&EC 601	Electronic Systems in Education and Science	3							
45	NS&EC 706	Basics of Artificial Intelligence	3	3		3	3		3	
46	NS&EC 902	Development of Mobile Applications for Android Operating System	3		3	3		3	3	
47	NS&EC 508	Principles of Management and IT Project Management	3							3
48	NS&EC 606	Basics of Cryptography	3			3			3	3
49	NS&EC 701 or NS&EC 921	Web-platform Based Development (ASP.NET MVC)	3							3
50	NS&EC 417	Animation in Computer Graphics	2	2		2			2	2
51	NS&EC 404	Computer Vector Graphics (Adobe Illustrator)	2	2		2		2		2
52	NS&E 912	Fundamentals of Sketching Culture (Concept Art)	2	2						2
53	NS&EC 405	Computer Graphics Indesign	2	2		2		2		2
54	NS&E 303	Multimedia Systems	2	2						2
55	NS&EC 501	Fundamentals of Advertising Design	2	2		2			2	2
56	NS&EC 907	Computer Graphics (After Effects Level 1)	2	2		2		2		
57	NS&EC 406	Computer Modeling and Animation	2	2		2			2	
58	NS&EC 502	Fundamentals of Advertising Design	3	3						
59	NS&EC 908	Computer Graphics (After effects Level 2)	3	3		3		3		
60	NS&EC 605	Computer Modeling and Rendering (Advanced Course)	3	3		3			3	
61	NS&EC 913	Fundamentals of Photo Design	3	3						
62	NS&EC 509	Multimedia Project Management	3		3	3	3	3	3	3
63	NS&EC 419	Visual Communications in Graphic Design		3	3	3		3		
64	NS&EC 418	Creative Technologies in Design		3	3		3	3		
65	NS&EC_914	Art Photography		3		3		3		3
66	NS&E 113	Fundamentals of Ad Psychology (Applied Psychology)		1	1					1
67	NS&EC 208	Social Psychology		2	2					2

68	NS&EC 511	Fundamentals of Creative Thinking		3	3					3
69	BBAC 501	Fundamentals of Marketing			2			2		2
70	BBAC 604	Fundamentals of Management			2			2		2
71	BBAE 607	Leadership Principles			2			2		2
72	BBAC 207	Fundamentals of Business Communication				3			3	3
73	BBAE 621	Fundamentals of Negotiation Skills				3			3	3
74	BBAC 605	Fundamentals of Organizational Behavior		3		3			3	3
75	NS&EC 507	Fundamentals of Strategic Management of a Brand		3		3			3	3
76	BBAE 618	Fundamentals of Innovative and Creative Management		3		3	3	3	3	3