



Computer Science Engineering BSc curriculum – 2024

**Debrecen
2026/2027.**

COMPUTER SCIENCE ENGINEERING BSc CURRICULUM

Mode:	Full-time training
Program Coordinator:	Dr. Imre Varga (varga.imre@inf.unideb.hu)
Mentor:	Dr. Attila Kuki (kuki.attila@inf.unideb.hu)

Qualification requirements

General requirements of the diploma are regulated by The Rules and Regulations of The University of Debrecen.

Work and Fire Safety and Physical Education

The courses of „Work and Fire Safety” and „Physical Education” are worth 1 - 1 credit, which must be completed in excess of the number of credits required for the diploma as specified in the training and outcome requirements of the degree.

Diploma credit requirements:

Natural Science:	45 credits
Humane and Economic Knowledge:	15 credits
Compulsory topics	93 credits
Differentiated knowledge topics:	30 credits
Professional Training:	12 credits
Thesis work:	15 credits
Free choice:	12 credits
Total:	210 credits
Work and Fire Safety:	1 credit
Physical Education (2 semesters):	2 credits

Professional training/Internship requirements

Professional training is a practice which is completed at a competent training place. It lasts for at least 8 weeks and 320 work hours.

It is a must to complete Professional training subject to issue the absolutorium (pre-degree certificate).

<https://inf.unideb.hu/en/professional-training>

Student can apply for Professional training after completing prerequisite subjects. Academic and Examination Rules and Regulations of the University of Debrecen contains those subjects.

Faculty of Informatics annex to the Academic and Examination Rules and Regulations of the University of Debrecen contains the procedure of the professional training.

The Thesis

During the studies, Student must write a thesis. Writing a thesis is a diploma requirement.

Thesis subject is mandatory to complete. The prerequisites to register for the Thesis subject are the followings:

- chose a thesis topic by the deadline.
(Together with the supervisor the candidate writes a work plan in the maximum of two pages. The work plan describes the aim of the work, areas of expertise and the scheduling of the work.)

- the chosen topic is approved by the Educational Committee
- at least 100 completed credits.

Final Exam / State Exam

a., Requirements for Final Exam

1. Complete all the 210 credits required by the curriculum of program specialisation to have the degree of BSc program
2. Carry out the internship
3. Write and submit the Diploma Thesis

b., Process of the Final Exam

The Final Exam consists of an oral part only and the purpose is to examine the coherence of the professional knowledge.

F. The grade of the oral exam (rounded to a whole number) of the Computer Science Engineering Final Exam Topics. If the grade for any item is failed, the grade is failed, and the final examination is failed.

D1. Thesis defence. During the defence the candidate has to sum up the Thesis in a short presentation then s/he answers the questions from the referee of the Thesis and the members of the Committee.

D2. The grade for the thesis, which is determined by the Final Examination Committee taking into account the grade proposed by the thesis assessor.

Calculation of the final examination grade (**ZV**): $ZV = (F+D1+D2)/3$

If the grade D2 is failed, the candidate will not be allowed to sit the final examination.

If any of the grades of F or D1 are unsatisfactory, the final exam is also unsatisfactory. Only the component graded as unsatisfactory must be retaken in the retake of the final examination.

Grade of Diploma:

Diploma grade: in the case of a successful final examination, it is determined based on the average of the following results:

- a) **SZ:** average of the grades for the 'Thesis 2' subject, the grade for the examination of the thesis and the grades obtained for the defence of the thesis in the final examination, rounded to two decimal places
- b) **F:** Average of the grades obtained in the final examination, rounded to a whole number
- c) **T:** credit-weighted average to two decimal places of all compulsory and optional professional subjects completed during the course of training, except for the 'Thesis 2' subject weighted by credits, rounded to two decimal places.

Diploma grade = $(SZ+F+T)/3$

Based on the above average result, the qualification of the diploma is determined by the University of Debrecen's Academic and Examination Regulations, Section 31 (7).

The diploma shall be assessed based on the calculation of the grade average as follows:

outstanding	4,81-5,00
excellent	4,51-4,80
good	3,51-4,50
satisfactory	2,51-3,50
pass	2,00-2,50

Natural Science – needed 45 credits

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INBMA0101-24 NBMA0101G	Algorithms and Basics of Programming	3		2		PM		1	1
INBMA0102-24 INBMA0102E INBMA0102L	Electronics	6	2		2	E S		1	1
INBMA0104-24 INBMA0104E INBMA0104G	Calculus	6	2	2		E S		1	1
INBMA0105-24 INBMA0105E INBMA0105L	Mathematics for Engineers 1	6	2		2	PM		1	1
INBMA0203-24 INBMA0203E INBMA0203L	Physics	6	2		2	E S		2	2
INBMA0207-17 INBMA0207E INBMA0207G	Data Structures and Algorithms	6	2	2		E S		2	2
INBMA0208-24 INBMA0208E INBMA0208L	Mathematics for Engineers 2	6	2		2	E S	INBMA0104-24 INBMA0105-24	2	2
INBMA0313-17 INBMA0313E INBMA0313L	Probability Theory and Mathematical Statistics	6	2		2	PM	INBMA0104-24 INBMA0105-24	1	3

Human and Economic Knowledge – needed 15 credits

Code	Subject name	Cred- it	Type and number			Asses- ment	Prerequisites	Period	Semes- ter
			lec.	practice					
				sem.	lab				
INBMA0314-17 INBMA0314E INBMA0314G	Economics	6	2	2		E S		1	3
INBMA0531-21 INBMA0531E	Fundamentals of Business Law	3	2			E		1	5
INBMA0632-17 INBMA0632E INBMA0632G	Management Basics for Engineers	6	2	2		E S		2	6

Compulsory topics – needed 93 credits

Code	Subject name	Cred- it	Type and number			Asses- ment	Prerequisites	Period	Semes- ter
			lec.	practice					
				sem.	lab				
INBMA0106-24 INBMA0106E INBMA0106G	Introduction into Logic and Computer Science	6	2	2		E S		1	1
INBMA0120-24 INBMA0120L	Operating Systems	3			2	PM		1	1

Code	Subject name	Cred- it	Type and number			Asses- ment	Prerequisites	Period	Semes- ter
			lec.	practice					
				sem.	lab				
INBMA0209-24 INBMA0209E INBMA0209L	Digital Design	6	2		2	E S	INBMA0102-24	2	2
INBMA0211-21 INBMA0211E INBMA0211L	Programming Languages 1	6	2		2	E S	INBMA0101-24	2	2
INBMA0315-17 INBMA0315L	Signals and Systems	3			2	PM	INBMA0102-24 INBMA0208-24	1	3
INBMA0316-17 INBMA0316L	Introduction to Graphical Programming Environment	3			2	PM	INBMA0101-24	1	3
INBMA0317-21 INBMA0317G INBMA0317L	Programming Languages 2	6		2	2	PM	INBMA0211-21	1	3
INBMA0318-17 INBMA0318E INBMA0318L	Computer Networks	6	2		2	E S	INBMA0120-24	1	3
INBMA0412-21 INBMA0412E	Computer Architectures	3	2			E	INBMA0209-24	2	4
INBMA0419-17 INBMA0419E	Management of Data Network Systems	3	2			E	INBMA0318-17	2	4
INBMA0421-24 INBMA0421L	System Programming	3			2	PM	INBMA0211-21	2	4
INBMA0422-21 INBMA0422L	Control Systems	3			2	PM	INBMA0315-17	2	4
INBMA0424-17 INBMA0424E	Enterprise Information Systems	3	2			E		2	4
INBMA0425-17 INBMA0425L	Web Solutions	3			2	PM	INBMA0211-21	2	4
INBMA0433-21 INBMA0433E INBMA0433L	Database Systems and Knowledge Representation	6	2		2	PM	INBMA0211-21	2	4
INBMA0434-24 INBMA0434L	IT Security	3			2	PM	INBMA0120-24	2	4
INBMA0435-24 INBMA0435L	Computer Graphics	3			2	PM	INBMA0211-21	2	4
INBMA0523-21 INBMA0523E INBMA0523L	Software Development for Engineers	6	2		2	E S	INBMA0317-21	1	5
INBMA0527-17 INBMA0527L	Assembly Programming	3			2	PM	INBMA0211-21 INBMA0412-21	1	5
INBMA0528-17 INBMA0528E INBMA0528L	Embedded Systems	6	2		2	E S	INBMA0211-21 INBMA0412-21	1	5
INBMA0526-24 INBMA0526E INBMA0526L	Introduction into Artificial Intelligence	6	2		2	E S	INBMA0106-24 INBMA0207-17 INBMA0211-21	1	5
INBMA0630-21 INBMA0630L	Mobile Solutions	3			2	PM	INBMA0317-21	2	6

Thesis work – needed 15 credits

Code	Subject name	Cred- it	Type and number			Asses- ment	Prerequisites	Period	Semes- ter
			lec.	practice					
				sem.	lab				
INBMA0636-21 INBMA0636X	Thesis 1	6				PM		2	6
INBMA0736-21 INBMA0736X	Thesis 2	9				PM		1	7

Differentiated knowledge topics – needed 30 credits

Code	Subject name	Cred- it	Type and number			Asses- ment	Prerequisites	Period	Semes- ter*
			lec.	practice					
				sem.	lab				
INBMA9937-17 INBMA9937E INBMA9937L	Microcontrollers	6	2		2	PM	INBMA0209-24 INBMA0211-21	2	4
INBMA9946-17 INBMA9946E	Fundamentals of Information and Coding Theory	3	2			E	INBMA313-17	2	4
INBMA9929-24 INBMA9929G	Modeling and Analysis of Information Technology Systems	3		2		PM	INBMA0313-17	1	5
INBMA9938-21 INBMA9938L	Programming Network Devices 1	6			4	PM	INBMA0318-17	1	5
INBMA9939-17 INBMA9939E INBMA9939L	Programmable Logic Devices	6	2		2	PM	INBMA0209-24 INBMA0211-21	1	5
INBMA9945-17 INBMA9945L	Scripting Languages	3			2	PM	INBMA0211-21	1	5
NBMA9940-17 INBMA9940L	Development of Embedded Systems	6			4	PM	INBMA0528-17 (INBMA9937-17 OR INBMA9939-17)	2	6
NBMA9941-21 INBMA9941L	Programming Network Devices 2	6			4	PM	INBMA9938-21	2	6
NBMA9942-17 INBMA9942E INBMA9942L	Modeling and Performance Evaluation of Networks	6	2		2	PM	INBMA9929-24	2	6
NBMA9943-17 INBMA9943E INBMA9943L	Telecommunication Systems	6	2		2	PM	INBMA0318-17	2	6
INBMA9947-17 INBMA9947L	Introduction to Cloud Technologies	3			2	PM	INBMA0211-21	2	6
INBMA9997-21 INBMA9997G	Professional Training	12				PM	INBMA0317-21 INBMA0318-17	1	6
NBMA9944-17 INBMA9944E INBMA9944L	Sensors and actuators Network	6	2		2	PM	INBMA0318-17 INBMA9937-17	1	7
INBMA9951-17 INBMA9951L	Basics of Autonomous Vehicles Development	6			4	PM	INBMA0211-21	1	
INBMA9952-17 INBMA9952L	Ethical hacking I.	3			2	PM	INBMA0211-21	1	
INBMA9953-17 INBMA9953E	Blockchain technology	3	2			E		1	

Code	Subject name	Cred- it	Type and number			Asses- ment	Prerequisites	Period	Semes- ter*
			lec.	practice					
				sem.	lab				
INBMA9958-17 INBMA9958L	Introduction to the AWS Cloud	3			2	PM		I	
INBMA9959-21 INBMA9959L	Network and System Security	3			2	PM	INBMA0120-24	I	
INBMA9960-21 INBMA9960L	Ethical hacking 2.	3			2	PM	INBMA9952-17	I	
INBMA9961-21 INBMA9961L	DevSecOps	3			2	PM	INBMA0120-24	I	
INBMA9962-21 INBMA9962L	Bioinformatics for Engineers	3		2		PM			
INBMA9963-21 INBMA9963L	Introduction to quantum computing	3			2	PM	INBMA0104-24 INBMA0208-24 INBMA0211-21	I	
INBMA9964-21 INBMA9964L	Introduction to Generative AI	3			2	PM		I	

* The recommended semester can be changed occasionally.

Free choice – needed 12 credits

Code	Subject name	Cred- it	Type and number			Asses- ment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				

* "Free choice" - Professional electives offered by the Faculty of Informatics and institutional electives offered by other faculties of the University of Debrecen.

Work and Fire Safety and Physical Education – needed 3 credits

must be completed in excess of the number of credits required for the diploma as specified in the training and outcome requirements of the degree

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
	Work and Fire Safety	1				PM			1
	Physical Education	1				PM			
	Physical Education	1				PM			

Exam types: E exam
S sign
PM practical