UNIVERSITY OF DEBRECEN, FACULTY OF INFORMATICS

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Computer Science Engineering MSc curriculum – 2021

Debrecen
2025/2026.

COMPUTER SCIENCE ENGINEERING MSC CURRICULUM

Mode:	Full-time training
Program Coordinator:	Dr. Tamás Márton Bérczes (berczes.tamas@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:	22 credits
Humane and Economic Knowledge:	10 credits
Compulsory topics:	28 credits
Differentiated knowledge topics:	24 credits
Professional Training:	9 credits
Thesis work:	30 credits
Free choice:	6 credits
Total	**120 credits**
Work and Fire Safety Training:	1 credit
Physical Education (1 semester):	1 credit

Professional training/Internship requirements

Professional training is a practice which is completed at a competent training place. It lasts for at least 6 weeks and 240 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 at least one semester.

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 30 completed credits.

Final Exam / State Exam

a., Requirements for Final Exam

1. Complete all the 120 credits required by the curriculum of program specialisation to have the degree of MSc 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 consists of an item of the Natural Science knowledge and the Informatical sciences knowledge. If the grade is failed, 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 subject, the grade for the thesis assessment and the grades for the thesis defence in the final examination, rounded to two decimal places.

b) **F**: The grade obtained at the final examination.

c) **T**: The credit-weighted average of all compulsory and optional professional subjects completed during the course, except for 'Thesis 1' and 'Thesis 2', rounded to two decimal places

Diploma grade = (0,3*SZ+0,2*F+0,5*T)

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 22 credits

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INMMA0101-21 INMMA0101E	Introduction the new network communication technologies	3	2			E			1
INMMA0102-17 INMMA0102E INMMA0102L	Mathematics and information theory for engineers	6	2		2	E S			1
INMMA0103-21 INMMA0103E INMMA0103L	System security techniques and solutions	6	2		2	E S			1
INMMA0123-21 INMMA0123L	Machine learning for engineers	3			2	PM			1
INMMA0206-21 INMMA0206E	Computer science in engineering applications	4	2			E			2

Humane and Economic Knowledge – needed 10 credits

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INMMA0207-17 INMMA0207E INMMA0207G	Introduction to Economics and Law	5	2	2		PM			2
INMMA0208-17 INMMA0208E INMMA0208L	Management and organizational knowledges	5	2		2	PM			2

Compulsory topics – needed 28 credits

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INMMA0104-17 INMMA0104E INMMA0104G	Performance Evaluation of Infocommunication Networks	6	2	2		E S			1
INMMA0105-21 INMMA0105E	System architectures	3	2			E			1
INMMA0124-21 INMMA0124L	Introduction to Big Data	3			2	PM			1
INMMA0209-17 INMMA0209E INMMA0209L	Logic design using hardware description language	6	2		2	PM			2
INMMA0210-17 INMMA0210E INMMA0210L	Paralell image processing and pattern recognition	6	2		2	E S			2

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INMMA0211-17 INMMA0211E	Internet of Things systems and technologies	4	2			E			2

Thesis work – needed 30 credits

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INMMA0312-17 INMMA0312L	Thesis 1	15			10	PM			3
INMMA0413-17 INMMA0413L	Thesis 2	15			10	PM			4

Differentiated knowledge topics – needed 24 credits

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INMMA9914-17 INMMA9914E INMMA9914L	Advanced switching and routing 1 (CCNP1)	6	2		2	E S	INMMA0211-17		3
INMMA9915-17 INMMA9915E INMMA9915L	Intelligent sensor networks	6	2		2	PM	INMMA0101-21		3
INMMA9916-17 INMMA9916E INMMA9916L	Multimedia networks	6	2		2	PM	INMMA0211-17		3
INMMA9917-17 INMMA9917E INMMA9917L	Reconfigurable embedded systems	6	2		2	PM	INMMA0209-17		3
INMMA9925-21 INMMA9925L	Data processing in a cloud environment	3			2	PM			3
INMMA9997-21 INMMA9997G	Professional Training	9				PM			3
INMMA9918-17 INMMA9918E INMMA9918L	Data mining for engineers	6	2		2	E S	INMMA0102-17		4
INMMA9919-17 INMMA9919E INMMA9919L	Cloud service architectures and services	6	2		2	PM	INMMA0101-21		4
INMMA9920-17 INMMA9920E INMMA9920L	Advanced switching and routing 2 (CCNP2)	6	2		2	E S	INMMA0211-17		4
INMMA9921-17 INMMA9921L	Hardware-software codesign	6			4	PM	INMMA0209-17		4
INMMA9922-17 INMMA9922E INMMA9922L	Microcontroller applications technology	6	2		2	PM	INMMA0105-21		4

Code	Subject name	Cre-dit	Type and number			Asses-ment	Prerequisites	Period	Semes-ter
			lec.	practice					
				sem.	lab				
INMMA9926-21 INMMA9926L	Advanced data processing in a cloud environment	3			2	PM	INMMA9925-21		4
INMMA9927-21 INMMA9927L	Machine learning algorithms in embedded systems	3			2	PM	INMMA0123-21		4
INMMA9928-17 INMMA9928L	Advanced Development of Autonomous Vehicles	6			4	PM		I	

Free choice – needed 6 credits

Code	Subject name	Cre-dit	Type and number			Asses-ment	Prerequisites	Period	Semes-ter
			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 2 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	Cre-dit	Type and number			Asses-ment	Prerequisites	Perio d	Semes-ter
			lec.	practice					
				sem.	lab				
	Work and Fire Safety	1				PM			1
	Physical Education	1				PM			

Exam types:
E exam
S signature
PM practical mark