



Computer Science MSc curriculum – 2026

**Debrecen
2026/2027.**

COMPUTER SCIENCE MSc CURRICULUM

Mode:	Full-time training
Program Coordinator:	Dr. György Vaszil (vaszil.gyorgy@inf.unideb.hu)
Mentor:	Dr. Norbert Oláh (olah.norbert@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:

Mathematical and computer sciences:	36 credits
compulsory courses:	15 credits
Elective courses:	21 credits
Informatical sciences:	48 credits
compulsory courses:	18 credits
Elective courses:	30 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 average from the grades of the oral exam (rounded to a whole number) consists of an item of the Mathematical and computer sciences knowledge and an item of the Informatical sciences knowledge. 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 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**: Average of the grades obtained in the final examination, rounded to a whole number.
- 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

Mathematical and computer sciences, compulsory courses – needed 15 credits

Code	Subject name	Cre- dit	Type and number			Asses- ment	Prerequisites	Period	Semes- ter
			lec.	practice					
				sem.	lab				
INMPA0102-26 INMPA0102E	Algorithms	6	2		2	E S			1
INMPA0103-21 INMPA0103E INMPA0103L	Cryptography	6	2		2	E S			1
INMPA0216-26 INMPA0216E	Models of computation	3	2			E			2

Informatical sciences, compulsory courses – needed 18 credits

Code	Subject name	Cred- it	Type and number			Asses- ment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INMPA0136-26 INMPA0136E INMPA0136L	Modern web standards	6	2		2	PM			1
INMPA0137-26 INMPA0137E INMPA0137L	Data management in intelligent systems	6	2		2	E S			1
INMPA0231-26 INMPA0231E INMPA0231L	Advanced software engineering	6	2		2	E S			2

Thesis work – needed 30 credits

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INMPA0308-17 INMPA0308L	Thesis 1	15			10	PM			3
INMPA0409-17 INMPA0409L	Thesis 2	15			10	PM			4

Mathematical and computer sciences, elective courses – needed 21 credits

Code	Subject name	Cred- it	Type and number			Asses- ment	Prerequisites	Period	Semester*
			lec.	practice					
				sem.	lab				
INMPA9949-26 INMPA9949E	Non-classical logics	3	2			E			1
INMPA9905-26 INMPA9905E INMPA9905L	Optimization algorithms	6	2		2	E S			2
INMPA9948-26 INMPA9948E INMPA9948L	Inference methods, logical calculi	6	2		2	PM			2
INMPA9913-17 INMPA9913E	Geometric modelling	3	2			E			3
INMPA9914-17 INMPA9914E	Coding theory	3	2			E			3

Code	Subject name	Cre- dit	Type and number			Asses- ment	Prerequisites	Period	Semester*
			lec.	practice					
				sem.	lab				
INMPA9938-26 INMPA9938E	Graph algorithms	3	2			E			3
INMPA9939-26 INMPA9939E INMPA99391G	Machine learning	6	2	2		E S			3
INMPA9950-26 INMPA9950E	Description logics and their applications	3	2			E			3
INMPA9917-21 INMPA9917E INMPA9917L	Declarative programming	6	2		2	E S			4
INMPA9940-26 INMPA9940E	Semantics of programming languages	3	2			E			4

Informatical sciences, elective courses – needed 30 credits

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester*
			lec.	practice					
				sem.	lab				
INMPA9918-21 INMPA9918L	Geoinformatics	3			2	PM			1
INMPA9924-17 INMPA9924L	Advanced software architecture patterns	3			2	PM			1
INMPA9926-26 INMPA9926L	NoSQL databases	3			2	PM			1
INMPA9945-26 INMPA9945L	Advanced machine learning models	3			2	PM			1
INMPA9942-26 INMPA9942E	Introduction to solution architecture	3	2			E			1
INMPA9906-26 INMPA9906E INMPA9906L	Data mining	6	2		2	E S			2
INMPA9907-26 INMPA9907E INMPA9907L	Computer graphics	6	2		2	E S			2
INMPA9919-26 INMPA9919E INMPA9919L	Advanced cloud computing	6	2		2	PM			2
INMPA9944-26 INMPA9944L	Programming paradigms	3			2	PM			2
INMPA9935-21 INMPA9935L	Rust: memory safe programming	3			2	PM			3
INMPA9943-26 INMPA9943E INMPA9943L	Parallel programming	6	2		2	PM			3
INMPA9951-26 INMPA9951L	Advanced data mining	3			2	PM			3
INMPA9997-21 INMPA9997G	Professional Training	9				PM			3

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester*
			lec.	practice					
				sem.	lab				
INMPA9920-17 INMPA9920E INMPA9920L	Image processing and medical imaging	6	2		2	PM			4
INMPA9921-26 INMPA9921L	Visualization and visual analytics	3			2	PM			4
INMPA9941-26 INMPA9941L	Big data systems and applications	3			2	PM			4
INMPA9946-26 INMPA9946L	Advanced software testing	3			2	PM			4
INMPA9947-26 INMPA9947L	Problem-solving strategies in programming	3			2	PM			4
INMPA9952-26 INMPA9952L	Generative artificial intelligence	3			2	PM		I	4

* The recommended semester can be changed occasionally.

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	Cred- it	Type and number			Asses- ment	Prerequisites	Period	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