



**UNIVERSITY of  
DEBRECEN**

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**FACULTY OF INFORMATICS**

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# **Computer Science MSc curriculum – 2017**

**Debrecen  
2018/2019.**



## COMPUTER SCIENCE MSc CURRICULUM

### Qualification requirements

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

### Diploma credit requirements:

Mathematical and computer sciences:	36 credits
compulsory courses:	21 credits
Elective courses:	15 credits
Informatical sciences:	42 credits
compulsory courses:	15 credits
Elective courses:	27 credits
Elective knowledge („Mathematical and computer sciences" or „Informatical")	6 credits
Thesis work:	30 credits
Free choice:	6 credits
Work and Fire Safety Training:	0 credit
Physical Education (1 semester):	0 credit
<b>Total:</b>	<b>120 credits</b>

### Mathematical and computer sciences, compulsory courses – needed 21 credits

Code	Subject name	Credit	Type and number			Asses- ment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INMPA0101E INMPA0101G	Machine learning basics	6	2	2		E S		1	1
INMPA0102E	Algorithms	3	2			E		1	1
INMPA0103E INMPA0103L	Cryptography	6	2		2	E S		1	1
INMPA0205E INMPA0205L	Optimization algorithms	6	2		2	E S		2	2

### Informatical sciences, compulsory courses – needed 15 credits

Code	Subject name	Credit	Type and number			Asses- ment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INMPA0104E	Information systems	3	2			E		1	1
INMPA0206E INMPA0206L	Data mining	6	2		2	E S		2	2
INMPA0207E INMPA0207L	Computer graphics	6	2		2	E S		2	2

### Thesis work – needed 30 credits

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

### Mathematical and computer sciences, elective courses – needed 15 credits

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INMPA9910L	Operation research	3			2	PM		1	1
INMPA9911E INMPA9911G	Advanced inference methods	6	2	2		PM		2	2
INMPA9912E	Logical algorithms	3	2			E		2	2
INMPA9913E	Geometric modelling	3	2			E	INMPA0207	1	3
INMPA9914E	Coding theory	3	2			E		1	3
INMPA9915E	Theory of neural networks	3	2			E	INMPA0205	1	3
INMPA9916E	Models of computation	3	2			E		1	3
INMPA9917E INMPA9917L	Declarative programming	6	2		2	E S		2	4

### Informatical sciences, elective courses – needed 27 credits

(At least one course from „Data science“ block and one course from „Information systems“ block)

#### „Data science“ block

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INMPA9918L	Geoinformatics	3			2	PM		1	1
INMPA9919L	Advanced cloud computing	3			2	PM		2	2
INMPA9920E INMPA9920L	Image processing and medical imaging	6	2		2	PM		2	2
INMPA9921E INMPA9921L	Visualization and visual analytics	6	2		2	E S	INMPA0207	1	3
INMPA9922L	Data science lab	3			2	PM	INMPA0101	2	4
INMPA9923E INMPA9923L	Advanced machine learning	6	2		2	E S	INMPA0101	2	4

**„Information systems” block**

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				
INMPA9924L	Advanced software architecture patterns	3			2	PM		1	1
INMPA9925E INMPA9925L	Advanced XML technologies	6	2		2	PM		1	1
INMPA9926L	NoSQL databases	3			2	PM		1	1
INMPA9927L	Sensor networks and the internet of things	3			2	PM		1	1
INMPA9928L	Parallel and high performance computing	3			2	PM		2	2
INMPA9929L	Text- and webmining	3			2	PM	INMPA0206	1	3
INMPA9930L	Information systems in practice	6			2	PM	INMPA0104	2	4
INMPA9931E INMPA9931L	Advanced software engineering	6	2		2	E S		2	4

**Free choice – needed 6 credit**

Code	Subject name	Credit	Type and number			Assessment	Prerequisites	Period	Semester
			lec.	practice					
				sem.	lab				