

Curriculum Master Computing Science 2015-2016

Each Master specialization consists of **90 ECTS compulsory courses** (see Tables 1–3) and **30 ECTS choice courses**:

- 15 ECTS can be chosen freely from any Master courses taught at the University
- 15 ECTS are guided choice courses, which means that three courses from the list of guided choice courses belonging to the Master specialization have to be chosen (see Tables 4–6)

Please note that a few master courses will not be taught each year, but **in alternating years** (see Table 8, also indicated between brackets behind the course names below). Make sure that you take this into account when you make your two-year planning for all the courses that have to be completed.

In Tables 1–3, courses printed in bold are equal between the different master specializations.

Table 1: Master specialization: **Intelligent Systems**

Year	Semester	Course	Course code	ECTS
1	Ia	Web and Cloud Computing	INMWCC-12	5
1	Ia	Pattern Recognition	INMPR-08	5
1	Ia	Optional module		5
1	Ib	Automated Reasoning	INMAR-08	5
1	Ib	Image Processing	INMIP-08	5
1	Ib	Neural Networks and Computational Intelligence	WMCS15001	5
1	IIa	Student colloquium CS	INMCOL-08	5
1	IIa	Multi-Agent Systems	KIM.MAS03	5
1	IIa	Computer Vision	INMCV-08	5
1	IIb	In-company or Research Internship (CS)	INSTAGE15	15
2	Ia	Optional module		5
2	Ia	Optional module		5
2	Ia	Optional module		5
2	Ib	Machine Learning	KIM.ML09	5
2	Ib	Optional module		5
2	Ib	Optional module		5
2	IIa and IIb	Master Thesis	INMAFST-08	30

Table 2: Master specialization: **Computational Science and Visualisation**

Year	Semester	Course	Course code	ECTS
1	Ia	Web and Cloud Computing	INMWCC-12	5
1	Ia	Geometric Algorithms (16/17)	INMGA-08	5
1	Ia	Modelling & Simulation	INMMS-08	5
1	Ib	Image Processing	INMIP-08	5
1	Ib	Advanced Computer Graphics	INMACG-08	5
1	Ib	Introduction Computational Science (15/16)	INMICS-08	5
1	IIa	Student colloquium CS	INMCOL-08	5
1	IIa	Scientific Visualisation	INMSV-08	5
1	IIa	Computer Vision	INMCV-08	5
1	IIb	In-company or Research Internship (CS)	INSTAGE15	15
2	Ia	Optional module		5
2	Ia	Optional module		5
2	Ia	Optional module		5
2	Ib	Optional module		5
2	Ib	Optional module		5
2	Ib	Optional module		5
2	IIa and IIb	Master Thesis	INMAFST-08	30

Table 3: Master specialization: **Software Engineering and Distributed Systems**

Year	Semester	Course	Course code	ECTS
1	Ia	Web and Cloud Computing	INMWCC-12	5
1	Ia	Software Architecture	INMSA-08	5
1	Ia	Software Maintenance & Evolution	INMSME-08	5
1	Ib	Image Processing	INMIP-08	5
1	Ib	Software Patterns	INMSP-08	5
1	Ib	Ubiquitous Computing (15/16)	INMUBC-09	5
1	IIa	Student colloquium CS	INMCOL-08	5
1	IIa	Formal Modeling of Communicating Systems	WMCS14001	5
1	IIa	Optional module		5
1	IIb	In-company or Research Internship (CS)	INSTAGE15	15
2	Ia	Distributed Systems ^[IEM]	INMDSY-08	5
2	Ia	Optional module		5
2	Ia	Optional module		5
2	Ib	Optional module		5
2	Ib	Optional module		5
2	Ib	Optional module		5
2	IIa and IIb	Master Thesis	INMAFST-08	30

Table 4: Guided choice courses **Intelligent Systems**

Year	Semester	Course	Course code	ECTS
1 or 2	Ia	Modelling & Simulation	INMMS-08	5
1 or 2	Ia	Robotics*	TBROB-12	5
1 or 2	Ib	Computational Semantics	LIX021M05	5
1 or 2	Ib	Cognitive Modeling: basic principles and methods	KIM.CMB11	5
1 or 2	Ib	Statistical Signal Processing (MSc)	STMASP-12	5
1 or 2	Ib	Robotics for AI**	KIM.ROB03	5
1 or 2	Ib	Dynamic Logic	INMDL-08	5
1 or 2	Ib	Ubiquitous Computing (15/16)	INMUBC-09	5
1 or 2	IIa	Scientific Visualisation	INMSV-08	5
1 or 2	IIa	Formal Modeling of Communicating Systems	WMCS14001	5
1 or 2	IIa	Natural Language Processing	LIX001M05	5
1 or 2	IIa	Business Intelligence***	TBBI05E	5
1 or 2	IIb	Handwriting Recognition	KIM.SCHR03	5

*Robotics (TBROB-12) requires prior physics knowledge

**Robotics for AI (KIM.ROB03) requires prior knowledge: Cognitive Robotics (contact study advisor Artificial Intelligence in advance if you want to take this course)

*** Not allowed if you have passed the Bachelor course Business Intelligence (TBBI05E) already

Tabel 5: Guided choice courses **Computational Science and Visualisation**

Year	Semester	Course	Course code	ECTS
1 or 2	Ia	Pattern Recognition	INMPR-08	5
1 or 2	Ia	Computational Physics	NACP-11	5
1 or 2	Ib	Machine Learning	KIM.ML09	5
1 or 2	Ib	Neural Networks and Computational Intelligence	WMCS15001	5
1 or 2	Ib	Statistical Signal Processing (MSc)	STMASP-12	5
1 or 2	Ib	Adv. self-organisation of social systems	MLBI0801	5
1 or 2	Ib	Cognitive Modeling: basic principles and methods	KIM.CMB11	5
1 or 2	IIa	Numerical Mathematics 2	WINM2-08	5
1 or 2	IIb	Numerical Mathematics 1	WINM1-07	5

Table 6: Guided choice courses **Software Engineering and Distributed Systems**

Year	Semester	Course	Course code	ECTS
1 or 2	Ia	Pattern Recognition	INMPR-08	5
1 or 2	Ia	Robotics*	TBROB-12	5
1 or 2	Ib	Machine Learning	KIM.ML09	5
1 or 2	Ib	Advanced Software Architecture	INMASA-10	5
1 or 2	IIa	Scientific Visualisation	INMSV-08	5
1 or 2	IIa	Business Intelligence***	TBBI05E	5
1 or 2	IIb	Systems Engineering	TBSE05E	5

*Robotics (TBROB-12) requires prior physics knowledge

*** Not allowed if you have passed the Bachelor course Business Intelligence (TBBI05E) already

Table 7: Optional free choice course provided by Computing Science

Year	Semester	Course	Course code	ECTS
1 or 2	Ila	Computer Ethics	WMCS13001	5

Table 8: Courses taught in alternating years

<i>Course</i>	<i>Taught in 2014-2015</i>	<i>Taught in 2015-2016</i>	<i>Taught in 2016-2017</i>
Geometric Algorithms	YES	NO	YES
Ubiquitous Computing	NO	YES	NO
Introd. to Computational Science	NO	YES	NO