Assessment Plan master degree programme Computing Science 2022-2023

27 June 2022

Introduction

This Assessment Plan is a systematic description of the way of examination and assessment of all study components in the master degree programme Computing Science 2021-2022 that are offered by the department of Computing Science.
It is based on the assessment policy of the Faculty of Science and Engineering, as set out in the 2016-2017 version of the FSE Quality Assurance Manual (Chapter 6: Assessment policy) and the protocol setting out the duties and powers of the Faculty's Board of Examiners (Manual for Board of Examiners 2017-2018, Chapter 4: Duties of the Board of Examiners).

The Assessment Plan consists of the following parts:

1. Objective of the degree programme.
2. Learning outcomes of the degree programme.
3. An overview of the examiners and the mode of assessment for each study component in the degree programme that is offered by the department Computing Science.
4. A matrix showing the relationship between the study components and the learning outcomes.
5. A description of the curriculum of the degree programme.
6. Descriptions of the content of each study component, consisting of:
    - objectives
    - description of content
    - lecturers
    - assessment mode(s) and calculation of final mark
    - mode(s) of instruction.

Parts 5 and 6 are not incorporated in this document. For part 5 we refer to the sections III, IV and V of the *Appendix of the Teaching and Examination Regulations MSc Computing Science 2021-2022*. Part 6 is available in the online course catalogue Ocasys[1].

1 http://www.rug.nl/ocasys/

1. Objective of the degree programme

The objective of the master's degree programme in Computing Science is to impart knowledge, skills, understanding and attitude by means of a broadly based curriculum such that master graduates are able to be independent professionals in the field of computing science.

2. Learning outcomes of the degree programme

The Master graduate in Computing Science:

G1. Is fully acquainted with the basic terms and techniques used in Computing Science, and is familiar with a number of classical problems and their solutions;
G2. Is experienced in the effective use of the tools available in solving Computing Science problems, such as compilers, theorem provers, visualisation software, case-tools and domain specific software and hardware;
G3. Is familiar with Computing Science applications in several other scientific fields of study;
G4. Is capable of clear communication (both oral and in writing) on the subject of Computing Science and its applications;
G5. Is capable of working in a team and in various projects;
G6. Is sensitive to the social aspects of Computing Science applications and his/her own responsibilities therein;
G7. Has specialized knowledge of theories, methods and techniques in one of the following subfields of Computing Science:
    a. Intelligent Systems and Visual Computing
    b. Software Engineering and Distributed Systems
    c. Data Science and Systems Complexity
    d. Science, Business & Policy
G8. Is able, by using scientific data and assessments, to analyse problems in Computing Science or a related scientific field of study, to provide specified solutions to the problem, and – if possible – to materialise these solutions (in the shape of an algorithm or program or an implementation in software or hardware);
G9. Is able to critically read professional literature and to assess its correctness, usability and relevance;
G10. Is able to contribute to the enhancement of scientific understanding in a subfield of Computing Science;
G11. Has a proper understanding of the scientific relevance of problem definitions and results, and of the validity of the scientific method used.

The first six learning outcomes are similar to those of the Bachelor programme in Computing Science.

Some subfields in the Computing Science master degree have the following additional learning outcomes:

The Master in Computing Science graduated in the subfield of Software Engineering and Distributed Systems:

P1. Is capable of systematically designing and implementing software systems in cooperation with interested parties;
P2. Is capable of integrating existing and new software components into a system that meets the quality criteria that were agreed upon.

The Master in Computing Science graduated in the subfield of Science, Business & Policy (SBP):

M1. Has a full understanding of the way in which businesses and policy organisations are functioning (governments and nongovernmental organisations, NGO's);
M2. Understands the connections between natural science research, trade and industry and governmental policies;
M3. Is able to integrate aspects of natural science, business and management;
M4. Is able to translate a concrete problem definition in business or management into a natural science problem definition;
M5. Is able to connect problem aspects of natural sciences to other relevant subject fields;
M6. Is able to put research data and conclusions into a business or policy context;
M7. Has developed his/her social and communicative skills:
M8. Is able to write texts that are effective and to the point;
M9. Is able to draw up an innovation plan or management plan for either a business or a government organisation;
M10. Is able to give convincing oral presentation;
M11. Is able to deliver an active contribution to plenary discussions;
M12. Familiar with techniques used in business meetings and is capable of chairing a meeting;
M13. Is able to work on a project as part of a team;
M14. Is able to give and receive feedback concerning his/her way of functioning in a team;
M15. Can work in a project;
M16. Is able to fully consider the interests or objectives of the ordering customer;
M17. Is able to plan a project independently;
M18. Is able to cooperate with the relevant parties involved in the project;
M19. Is able to adequately deal with limitations in time, information and means;
M20. Is able to prepare the implementation of a project result;
M21. Is capable of taking professional responsibility;
M22. Is able to take responsibility on behalf of the organisation;
M23. Is able to recognize the strategic aspects of his/her own project;
M24. Is able to provide practical solutions in matters concerning the ethical and professional codes of his/her own field of expertise and of the professional organisation.

3. Overview of the examiners and the mode of assessment for each study component offered by the department Computing Science

For the assessment methods, the following abbreviations are used:

WE: written exam
OE: oral exam
HW: homework
LA: computer lab assignment, including reporting
OA: other assignments, including reporting
P: presentation
TH: thesis or report

Course name	1st and 2nd examiner	assessment
Web and Cloud Computing	V. Andrikopoulos , A. Lazovik	WE, LA
Advanced Topics in Security and Privacy	F. Turkmen, tba	P, OA
Software Architecture	P. Avgeriou, D.Feitosa	OA, TH, P
Software Maintenance and Evolution	A. Capiluppi, M.A.M. Soliman	LA
Pattern Recognition for CS	J. Guo, tba	WE, LA
Modelling and Simulation	M. Biehl, M.H.F. Wilkinson	WE, LA
Image Processing	A. Meijster, J. Guo	WE, LA
Neural Networks and Computational Intelligence	M. Biehl, tba	WE, LA
Information Systems	G. Azzopardi, D. Karastoyanova	WE, LA
Evidence-Based Software Engineering	P. Avgeriou, M.A.M. Soliman	OA, P
Introduction to Data Science	K. Bunte, M.Mohammadi	WE, LA
Advanced Computer Graphics	J. Kosinka, S.D. Frey	LA, P, OA
Student Colloquium CS	R. Smedinga, M. Biehl	P, TH
Scientific Visualization	S.D. Frey, J. Kosinka	WE, LA
Scalable Computing	A. Lazovik, M.H.F. Wilkinson	WE, LA, P
Computer Vision	M.H.F. Wilkinson, M. Babai	WE, LA
Models and Semantics of Computation	J.A. Perez, H. Hansen	HW, P, TH
Fundamentals of Distributed Systems	B. Koldehofe, D. Karastoyanova	WE, P, LA
Enterprise Application Integration	D. Karastoyanova , M. Riveni	LA, P
Advanced Parallel Programming	G. Gaydadjiev, A. Shahbahrami	WE, OA
Process Aware Information Systems	D. Karastoyanova, tba	LA, P
Software Defined Networking	A. Koldehofe, tba	WE, OA
Modal Logic and Proof Theory	H. Hansen, D. Ramanayake	OA (HW)
Perception for Visual Computing	O.T. Tursun, J. Kosinka	P, TH, OA
Social Network Analysis	M. Riveni, G. Azzopardi	WE, TH
Ethical Hacking	F.F.M. Mohsen, G. Gaydadjiev	WE, LA, P
Software Analytics	A. Rastogi, P. Avgeriou	P, OA
Advanced Software Architecture	M. Stal, tba	OA
In-company or Research Internship (15 ECTS)	[supervising lecturers] M.H.F. Wilkinson, R. Smedinga	TH, (P)
Master Thesis (30 ECTS)	[supervising lecturers] G. Azzopardi	TH, P

List of examiners for the Master Computing Science 2021-2022:

Name	Examiner Master thesis	Course examiner
dr. V. Andrikopoulos	X	X
prof. dr. ir. P. Avgeriou	X	X
dr. G. Azzopardi	X	X
M. Babai, drs.		X
prof. dr. M. Biehl	X	X
prof dr. K. Bunte	X	X
prof. dr. A. Capiluppi	X	X
dr. D. Düstegör	X	X
dr. D. Feitosa	X	X
dr. S.D. Frey	X	X
prof. dr. ir. G. Gaydadjiev	X	X
dr. J. Guo	X	X
prof. dr. H.H. Hansen	X	X
prof. dr. D. Karastoyanova	X	X
prof. dr. B. Koldehofe	X	X
prof. dr. J. Kosinka	X	X
prof. dr. A. Lazovik	X	X
dr. A. Meijster	X	X
dr. F.F.M. Mohsen	X	X
M.Mohammadi, MSc		X
prof. dr. N. Petkov	X	
prof. dr. J.A. Perez Parra	X	X
dr. D.R.S. Ramanayake	X	X
dr. A. Rastogi	X	X
prof. dr. G.R. Renardel de Lavalette	X	
dr. M. Riveni	X	X
prof. dr. J.B.T.M. Roerdink	X	
dr. A. Shahbahrami	X	X
dr. R. Smedinga	X	X
dr. M.A.M. Soliman	X	X
prof. dr. M. Stal	X	X
Dr. O.T. Tursun	X	X
prof. dr. T. van der Storm	X	
dr. F. Turkmen	X	X
dr. M.H.F. Wilkinson	X	X

For thesis projects, PhD students and Postdocs can serve as second examiner.

4. Relation between the study components and the learning outcomes

X: contributes *strongly* to the corresponding learning outcome
x: contributes *moderately* to the corresponding learning outcome
(x): contributes to guided choices
*: course offered by the department Artificial Intelligence

							IS&VC	DS&SC	SE&DS					SE&DS	SE&DS
	G													P	
	1	2	3	4	5	6	7	7	7	8	9	10	11	1	2
Web and Cloud Computing	X	X			X		X	X	X	X			X	X	X
Software Architecture	X	X		X	X			(x)	X	X	X	X	X	X	X
Software Maintenance and Evolution	X	X			X	X		(x)	X	X			X		X
Pattern Recognition for CS	X	X	X		X	X	X	X	(x)	X	X	X	X	X	
Modelling and Simulation			X	X	X	X	(x)	X		X	x	X	X		
Machine Learning*	X	X		X	X		X			X			X		
Image Processing	X	X	X		X		X	(x)		X			X		
Neural Networks and Computational Intelligence	X	X	X	X	X	X	X	X		X			X		
Information Systems	X			X	X			X		X	X	X	X		
Evidence-Based Software Engineering				X	X	x			X	X	X	X	X		
Introduction to Data Science	X		X	X	X	X		X		X			X		
Advanced Computer Graphics	X	X	X	X	X		X			X	X		X		
Student Colloquium				X	X	X	X	X	X	X	X	X	X		
Scientific Visualization	X	X	X		X		X	X	(x)	X	X		X	X	X
Scalable Computing	X	X			X		(x)	X	X	X			X	X	X
Computer Vision	X	X	X		X		X			X			X		
Logical Aspects of Multi-Agent Systems*	X	X		X	X		(x)		(x)	X		X	X	X	X
Models and Semantics of Computation	X	X		X			(x)		X	X	X		X	X	
Fundamentals of Distributed Systems	X	X			X		X	X	X	X	X	X	X	X	X
Enterprise Application Integration	X	X			X		X	X	X	X			X	X	X
Advanced Topics in Security and Privacy	X				X			X		X			X		
Advanced Parallel Programming	X	X	X	X			X	X	X	X	X		X	X	X
Process Aware Information Systems	X	X			X		X	X	X	X			X	X	X
Modal Logic and Proof Theory	X						X	X				X			
Perception for Visual Computing									X	X	X	X	X		
Social Network Analysis	X		x	x	X	X	X	X	X	x	X		X		
Ethical Hacking	X	X	X	X	X	X		X	X	X	X	X	X		
Software Analytics	x			X	x	x		x	x	x	x			x	
In-company or Research Internship	X	X		X	X	X	X	X	X	X		X	X	X	X
Master Thesis	X	X		X			X	X	X	X	X	X	X	X	X

The relation between the study components and the learning outcomes in the subfield of Science, Business & Policy (learning outcomes M1–M24) can be found in the assessment plan of the SBP track.