Appendices Master's Degree Programme Human Machine Communication 2017 - 2018

Appendix I Learning Outcomes of the Degree Programme (Article 1.3)

1. The master demonstrates knowledge, understanding and the ability to evaluate, analyze and interpret relevant data, all on a level that builds on and surpasses the level of the bachelor Artificial Intelligence, in at least three of the research areas below. In one research area of Human Machine Communication the master has specialized knowledge at an advanced level.

   a. Computational theories and models of cognitive processes
   b. Multivariate statistics
   c. Cognitive ergonomics
   d. Application of formal models of cognition in human-computer interaction and education
   e. Linguistics and language technology
   f. Cognitive neuroscience

2. The master demonstrates knowledge and understanding, on a level that builds on and surpasses the level of the bachelor Artificial Intelligence, in the empirical sciences (Psychology, Biology and Physics) and has experience applying and analyzing results thereof.

3. The master demonstrates relevant knowledge and the ability to apply methods and techniques from mathematics and logic used in Human Machine Communication.

4. The master demonstrates relevant knowledge and the ability to use programming languages used in the field of Human Machine Communication.

5. The master has the ability to, on an international academic level, analyze problems, critically and constructively review both one's own and other scientific results, even if incomplete, and to communicate about this both individually and in a group, both orally and in written form, also in a broader societal context, to both specialists and non-specialists.

6. The master has the ability to critically reflect on his/her own working method and knowledge and to recognize the need for continued learning with a high degree of autonomy, and is able to understand the scientific developments within the field of Human Machine Communication.

Appendix II Specializations of the Degree Programme (Article 2.2)

Students must choose one of the following specializations:

a) specialization Cognitive Modelling
b) specialization Cognitive Engineering
c) specialization Computational Cognitive Neuroscience
d) specialization Cognitive Language Modelling

Appendix III Content of the Degree Programme (Article 2.3)

1. The **degree programme** consists of the following mandatory course units with a study load of 5 ECTS credit points unless otherwise stated:

Mandatory course units with a study load of 5 ECTS, unless otherwise stated
Formal Models of Cognition [**KIM.FMC11**]
Cognitive Modelling: Basic Principles and Methods [**KIM.CMB11**]
Multivariate Models [**PSMM-5**] ***or*** Repeated Measures [**PSMM-2**]
First-Year Research project (15 ECTS) [**KIM.FYRP11**]
Final Research Project (45 ECTS) [**KIM.AFMC06**] ***or*** Final Research Project (30 ECTS) [**KIM.AFMC30**] *and* Internship (15 ECTS) [**KIM.STAHMC**]

To meet missing entry requirements, the Board of Examiners may in individual cases define one other mandatory course unit (5 ECTS) from the following fields: programming, cognitive psychology, statistics, linguistics or cognitive neuroscience.

The different **specializations** also contain the following mandatory course units with a study load of 5 ECTS:

Cognitive Modelling

Mandatory course units with a study load of 5 ECTS, unless otherwise stated
Cognitive Modelling – Complex Behaviour [**KIM.CMC11**]
User Models [**KIM.UM03**]
Computational Cognitive Neuroscience [**KIM.CCN11**]

Cognitive Engineering

Mandatory course units with a study load of 5 ECTS, unless otherwise stated
Cognitive Engineering [**KIM.CE11**]
Neuro-ergonomics [**KIM.NE06**]
User Models [**KIM.UM03**]

Computational Cognitive Neuroscience

Mandatory course units with a study load of 5 ECTS, unless otherwise stated
Computational Cognitive Neuroscience [**KIM.CCN11**]
Cognitive Modelling – Complex Behaviour [**KIM.CMC11**]
Machine Learning [**KIM.ML09**]

Cognitive Language Modelling

Mandatory course units with a study load of 5 ECTS, unless otherwise stated
Language Modelling [**KIM.LM04**]
Computational Discourse [**KIM.CD09**]
Language Technology Project [**LIX025M05**]

Appendix IV Elective Course Units (Article 2.4)

1. With the approval of the Board of Examiners, a student may choose one or more of the following elective course units with a study load of 5 ECTS:

Elective course units with a study load of 5 ECTS, unless otherwise stated
Arguing Agents [**KIM.AA08**]
Auditory Biophysics [**KIM.AB09**]
Cognitive Engineering [**KIM.CE11**]
Cognitive Modelling – Complex Behaviour [**KIM.CMC11**]
Cognitive Robotics [**KIM.CROB04**]
Computational Cognitive Neuroscience [**KIM.CCN11**]
Computational Discourse [**KIM.CD09**]
Design of Multi-Agent Systems [**KIM.DMAS04**]
Handwriting Recognition [**KIM.SCHR03**]
Language Modelling [**KIM.LM04**]
Machine Learning [**KIM.ML09**]
Multi-Agent Systems [**KIM.MAS03**]
Neuro-ergonomics [**KIM.NE06**]
Robotics for Artificial Intelligence [**KIM.ROB03**]
User Models [**KIM.UM03**]

2. With the approval of the Board of Examiners, a student may also choose one or more of the following elective course units taught by other degree programmes with a study load of 5 ECTS unless otherwise stated (for form of examination refer to the Teaching and Exam regulations of the appropriate Degree Programmes):

   - Advanced Experimental Skills [**PSMCV-1**]
   - Advanced Imaging Techniques [**MLBI0901**]
   - Advanced Self-Organisation of Social Systems [**MLBI0801**]
   - Auditory and Visual Perception [**WMBC13001**]
   - Cognitive Psychology, Theory and Applications [**PSMCB-2**]
   - Computational Semantics [**LIX021M05**]
   - Computer-Mediated Communication [**LIX022M05**]
   - Corpus Linguistics [**LTR024M05**]
   - Introduction Science and Business[a] [**WNBIBEB08A**]
   - Introduction Science and Policy[a] [**WNBIBEB08B**]
   - Language Technology Project [**LIX025M05**]
   - Natural Language Processing [**LIX001M05**]
   - Philosophy of Neuroscience [**FI024FK**]
   - Programming in C++[b] [**RC-C++1**, **RC-C++2**, **RC-C++3**]
   - Psychophysiology and its Applications [**PSMCB-1**]
   - Science Communication Skills [**WMEC13004**]
   - Scientific Visualization [**INMSV-08**]
   - Semantic Web Technology [**LIX002M05**]
   - User Interface Evaluation [**LIX024M05**]
   - Web and Cloud Computing [**INMWCC-12**]

a) This course yields 10 ECTS credit points. You can take either Introduction Science and Business or Introduction Science and Policy, and will only be awarded credit points for one of the two course units.
b) Part I, Part II and Part III combine to a maximum of 8 ECTS credit points. Part I yields 2 ECTS credit points. If you take two out of three parts, you will receive 5 ECTS credit points.

Appendix V Entry Requirements and Compulsory Order of Examinations
(Article 3.4)

Course Unit Name	Entry Requirements
Final Research Project [**KIM.AFMC06**, **KIM.AFMC30**]	– Formal Models of Cognition [**KIM.FMC11**] – Cognitive Modelling – Basic Principles and Methods [**KIM.CMB11**] – Multivariate Models [**PSMM-5**] *or* Repeated Measures [**PSMM-2**] – First-Year Research Project [**KIM.FYRP11**]
Robotics for Artificial Intelligence [**KIM.ROB03**]	– Cognitive Robotics [**KIM.CROB04**] *or* Autonomous Systems Practical [**KIB.PAS05**]
Handwriting Recognition [**KIM.SCHR03**]	– Signals and Systems [**KIB.SENS12**]
Multi-Agent Systems [**KIM.MAS03**]	– Advanced Logic [**KIB.VL03**] *or* Dynamic Logic [**INMDL-08**]

Appendix VI Admission to the Degree Programme and Different Specializations (Article 5.1.1, Article 5.2)

1. Students in possession of a Dutch or foreign certificate of higher education that indicates that they have the following knowledge and skills shall be admitted to the degree programme:
   - knowledge of and insight in the subject of Artificial Intelligence
   - knowledge of and insight in the subject of Cognitive Psychology or Cognitive Science
   - knowledge of and insight in the subject of Statistics and Research methods
   - practical skills in Programming

2. The holder of a certificate from the Bachelor's degree programme "Artificial Intelligence" of any university in the Netherlands is expected to have the knowledge and skills listed in Article 5.1.1 and is admitted to the degree programme on that basis.

Appendix VII Transitional Arrangement (Article 7.1)

There are currently no transitional provisions in the Human-Machine Communication degree programme.

Appendix VIII

Application Deadlines for Admission (Article 5.6.1)

Deadline of Application	Non-EU students	EU students
Nanoscience	February 1st 2018	May 1st 2018
Behavioural and Cognitive Neurosciences	May 1st 2018	May 1st 2018
Biomolecular Sciences (top programme)	May 1st 2018	May 1st 2018
Evolutionary Biology (top programme)	May 1st 2018	May 1st 2018
Remaining FSE Masters	May 1st 2018	May 1st 2018

Decision Deadlines (Article 5.6.3)

Deadline of Decision	Non-EU students	EU students
Nanoscience	June 1st 2018	June 1st 2018
Behavioural and Cognitive Neurosciences	June 1st 2018	June 1st 2018
Biomolecular Sciences (top programme)	June 1st 2018	June 1st 2018
Evolutionary Biology (top programme)	June 1st 2018	June 1st 2018
Remaining FSE Masters	November 1st 2018	November 1st 2018