
Data Science

Semester 7 [30 ECTS]

TU Basics in data science [15 ECTS] – 147 hours

- Clouds - Distributed Systems and Cloud Computing (5)
- Malis - Machine Learning and Intelligent System (5)
- DBSys - Database Management System Implementation (5)

TU Web Science and mathematical methods [5 ECTS] – 50 hours

- ImCod - Image & Video Compression (2,5)
- Quantis – Quantum Information Science (2,5)
- SofDev - Software development methodologies (2,5)
- WebInt - Interaction Design and Development of Modern Web Applications (2,5)
- BigSec - Security and privacy for Big Data and Cloud (2,5)

TU Opening [5 ECTS] – 50 hours

- Long technical course (5)
- Short technical course (2,5)
- Student initiative (1)
- Awareness-raising to research (1,5)

TU Social and Human Sciences [4 ECTS] – 42 hours

- Property - Intellectual property law (2)
- B_INNOV: How to adopt the right posture and move from idea to market! (4)
- ManagIntro - Introduction to Management (4)
- RDI - Responsible Digital Innovation: Risks, Ethics and Technology (2)
- TeamLead - Personal Development and Team Leadership (4)
- CSE - The challenges of a sustainable economy

TU Languages [1 ECTS] – 22 hours

DNM. 2 & 3

Semester 8 [30 ECTS]

TU Advanced in Machine Learning [10 ECTS] – 120 hours

- ASI - Advanced Statistical Inference (5)
- AML - Algorithmic Machine Learning (2,5)
- DeepLearning - Deep Learning (2,5)

TU Applications and Data Science [10 ECTS] – 100 hours

- 3DGraph - 3-D and virtual imaging (analysis and synthesis) (5)
- Malcom - Machine Learning for Communication systems communication (5)
- AppIOT- Iot Application Protocols (2,5)
- Forensics - Cyber-crime and Computer Forensics (2,5)
- FormalMet - FormalMethods-Formal specification and verification of systems (2,5)
- ImSecu - Imaging Security (2,5)
- Speech - Speech and audio processing (2,5)
- WebSem - Semantic Web and Information Extraction technologies (2,5)

TU Opening [5 ECTS] - 50 hours

- Long technical course (5)
- Short technical course (2,5)
- Student initiative (1)
- Awareness-raising to research (1,5)
- Research Project (5)

TU Social and Human Sciences [4 ECTS] – 42 heures

- Business - Business simulation (4)
- Law - General introduction to law : contracts, setting up a business (2)
- ProjMan – Project Management (4)
- SATT - Sociological Approaches of Telecom Technologies (2)
- TeamLead - Personal Development and Team Leadership (4)

TU Languages [1 ECTS] – 22 hours

DNM. 2 & 3

Semester 9 [30 ECTS]

TU Applications [10 ECTS] – 100 hours

- Stats - Foundations of Statistical Inference (2,5)
- ImProc - Digital Image Processing (2,5)
- SysSec - System and Network Security (5)
- Optim - Optimization Theory with Applications (2,5)
- MPC - Multiparty Computation and Blockchainsblockchains (2,5)
- MobServ - Mobile application and services (5)
- InfoTheo - Information theory (5)

TU Opening [5 ECTS] – 50 hours

- Long technical course (5)
- Short technical course (2,5)
- Student initiative (1)

UE Project [10 ECTS] - 200 hours

TU Social and Human Sciences [4 ECTS] – 42 hours

- Property - Intellectual property law (2)
- B_INNOV: How to adopt the right posture and move from idea to market! (4)
- ManagIntro - Introduction to Management (4)
- RDI - Responsible Digital Innovation: Risks, Ethics and Technology (2)
- TeamLead - Personal Development and Team Leadership (4)
- CSE - The challenges of a sustainable economy

TU Languages [1 ECTS] – 22 hours

Semester 10 [30 ECTS]

6 months internship

Internet of things

Semester 7 [30 ECTS]

TU Basics in IOT [10 ECTS] – 112 hours

- Malis - Machine Learning and Intelligent System (5)
- SysSec - System and Network Security (5)

TU Software: Engineering, Security & Networking [10 ECTS] – 100 hours

- OS – Operating systems (5)
- CompArch – Computer architecture (5)
- SoftDev - Software development methodologies (2,5)
- MobServ - Mobile application and services (5)
- Optim - Optimization Theory with Applications (2,5)
- MobMod – Mobility Modeling (2,5)

TU Opening [5 ECTS] – 50 hours

- Long technical course (5)
- Short technical course (2,5)
- Student initiative (1)
- Awareness-raising to research (1,5)

TU Social and Human Sciences [4 ECTS] – 42 hours

- Property - Intellectual property law (2)
- B_INNOV: How to adopt the right posture and move from idea to market! (4)
- ManagIntro - Introduction to Management (4)
- RDI - Responsible Digital Innovation: Risks, Ethics and Technology (2)
- TeamLead - Personal Development and Team Leadership (4)
- CSE - The challenges of a sustainable economy

DNM. 2 & 3

Semester 8 [30 ECTS]

TU Advanced in IOT [10 ECTS] – 84 hours

- AppIOT - Iot Application Protocols (2,5)
- ProtIOT Iot Communication Protocols (2,5)
- DeepLearning – Deep Learning (2,5)
- WebSem - Semantic Web and Information Extraction technologies (2,5)

TU Software: Engineering, Security & Networking – II [10 ECTS] – 100 hours

- WiSec – Wireless Security (5)
- HWSec - Hardware Security (2,5)
- Malcom - Machine Learning for Communication systems communication (5)
- MobAdv - Mobile Advanced Networks (2,5)
- MobWat - Wireless Access Technologies (2,5)
- Netsoft - Network Softwerization (2,5)

TU Opening [5 ECTS] – 50 hours

- Long technical course (5)
- Short technical course (2,5)
- Student initiative (1)
- Awareness-raising to research (1,5)
- Research Project (5)

TU Social and Human Sciences [4 ECTS] – 42 hours

- Business - Business simulation (4)
- Law - General introduction to law : contracts, setting up a business (2)
- ProjMan – Project Management (4)
- SATT - Sociological Approaches of Telecom Technologies (2)
- TeamLead - Personal Development and Team Leadership (4)

TU Languages [1 ECTS] – 22 hours

DNM. 2 & 3

Semester 9 [30 ECTS]

TU Software and Systems [10 ECTS] – 100 hours

- Clouds - Distributed Systems and Cloud Computing (5)
- MobSys - Systèmes de communications mobiles (5)
- UMLemb - Conception de systèmes embarqués avec UML (2,5)
- Stand - Standardization activities (2,5)
- NetMod - Network Modeling (5)
- MPC – Multiparty Computation and Blockchains (2,5)
- MobiSec - Mobile Systems and Smartphone Security (5)

TU Opening [5 ECTS] – 50 hours

- Long technical course (5)
- Short technical course (2,5)
- Student initiative (1)

TU Project [10 ECTS] – 200 hours

TU Social and Human Sciences [4 ECTS] – 42 hours

- Property - Intellectual property law (2)
- B_INNOV: How to adopt the right posture and move from idea to market! (4)
- ManagIntro - Introduction to Management (4)
- RDI - Responsible Digital Innovation: Risks, Ethics and Technology (2)
- TeamLead - Personal Development and Team Leadership (4)
- CSE - The challenges of a sustainable economy

TU Languages [1 ECTS] – 22 hours

Semester 10 [30 ECTS]

6 months internship

Intelligent Communication systems

Semester 7 [30 ECTS]

TU Wireless Communications: Principles and Trends [10 ECTS] – 84 hours

- ATWireless - Advanced topics in wireless communications (5)
- MobSys - Mobile communication systems (5)

TU Mobile Networks and Models [10 ECTS] – 100 hours

- DigiCom - Digital communications (5)
- NetMod - Network Modeling (5)
- InfoTheo - Information theory (5)
- MobCom - Mobile communication techniques (5)
- SSP - Statistical signal processing (5)

TU Opening [5 ECTS] – 50 hours

- Long technical course (5)
- Short technical course (2,5)
- Student initiative (1)
- Awareness-raising to research (1,5)

TU Social and Human Sciences [4 ECTS] – 42 hours

- Property - Intellectual property law (2)
- B_INNOV : How to adopt the right posture and move from idea to market! (4)
- ManagIntro - Introduction to Management (4)
- RDI - Responsible Digital Innovation: Risks, Ethics and Technology (2)
- TeamLead - Personal Development and Team Leadership (4)
- CSE - The challenges of a sustainable economy

TU Languages [1 ECTS] – 22 hours

DNM. 2 & 3

Semester 8 [30 ECTS]

TU Networks and Optimization [10 ECTS] – 100 hours

- Radio - Radio engineering (5)
- Malcom - Machine Learning for Communication systems communication (5)
- MobAdv - Mobile Advanced Networks (2,5)
- NetSoft - Network Softwerization (2,5)

TU Mathematical and Algorithmic Methods [10 ECTS] – 100 hours

- ASI - Advanced Statistical Inference (5)
- CompMeth - Computational Methods for digital communications (5)
- MobWat - Wireless Access Technologies (2,5)
- AML - Algorithmic Machine Learning (2,5)
- DeepLearning - Deep Learning (2,5)
- SP4Com - Signal Processing for Communications (5)
- WebSem - Semantic Web and Information Extraction technologies (2,5)
- WiSec - Wireless Security (2,5)

TU Opening [5 ECTS] – 50 hours

- Long technical course (5)
- Short technical course (2,5)
- Student initiative (1)
- Awareness-raising to research (1,5)
- Research Project (5)

TU Social and Human Sciences [4 ECTS] – 42 hours

- Business - Business simulation (4)
- Law - General introduction to law : contracts, setting up a business (2)
- ProjMan – Project Management (4)
- SATT - Sociological Approaches of Telecom Technologies (2)
- TeamLead - Personal Development and Team Leadership (4)

TU Languages [1 ECTS] – 22 hours

DNM. 2 & 3

Semester 9 (30 ECTS)

TU Mobile Services and Applications [10 ECTS] - 100 hours

- MobServ - Mobile application and services (5)
- Optim - Optimization Theory with Applications (2,5)
- MobiSec - Mobile Systems and Smartphone Security (5)
- Malis - Machine Learning and Intelligent System (5)
- Clouds - Distributed Systems and Cloud Computing (5)
- Stats - Foundations of Statistical Inference (2,5)
- NetMod - Network Modeling (5)
- Quantis - Quantum Information Science (2,5)
- Stand - Standardization activities (2,5)
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TU Opening [5 ECTS] – 50 hours

- Long technical course (5)
- Short technical course (2,5)
- Student initiative (1)

TU Project [10 ECTS] – 200 hours

TU Social and Human Sciences [4 ECTS] – 42 hours

- Property - Intellectual property law (2)
- B_INNOV: How to adopt the right posture and move from idea to market! (4)
- ManagIntro - Introduction to Management (4)
- RDI - Responsible Digital Innovation: Risks, Ethics and Technology (2)
- TeamLead - Personal Development and Team Leadership (4)
- CSE - The challenges of a sustainable economy

TU Languages [1 ECTS] – 22 hours

Semester 10 [30 ECTS]

6 months internship

Digital Security

Semester 7 [30 ECTS]

TU Fundamentals of Computer Security [10 ECTS] - 94 hours

- SecCom - Secure communications (5)
- SysSec - System and Network Security (5)

TU: Systems and network programming [10 ECTS] - 100 hours

- MobiSec - Mobile Systems and Smartphone Security (5)
- Quantis – Quantum Information science (2,5)
- SoftDev - Software development methodologies (2,5)
- Malis - Machine Learning and Intelligent System (5)
- ImProc - Digital Image Processing (2,5)

TU Opening [5 ECTS] - 50 hours

- Long technical course (5)
- Short technical course (2,5)
- Student initiative (1)
- Awareness-raising to research (1,5)

TU Social and Human Sciences [4 ECTS] - 42 hours

- Property - Intellectual property law (2)
- B_INNOV: How to adopt the right posture and move from idea to market! (4)
- ManagIntro - Introduction to Management (4)
- RDI - Responsible Digital Innovation: Risks, Ethics and Technology (2)
- TeamLead - Personal Development and Team Leadership (4)
- CSE - The challenges of a sustainable economy

TU Languages [1 ECTS] - 22 hours

DNM. 2 & 3

Semester 8 [30 ECTS]

TU Advanced Courses in Security [10 ECTS] – 100 hours

- Forensics - Cyber-crime and Computer Forensics (5)
- HWSec - Hardware Security (2,5)
- ImSecu - Imaging Security (2,5)
- WiSec – Wireless Security (2,5)

TU Analysis and Design of Computer System Interfaces [10 ECTS] – 100 hours

- Speech - Speech and audio processing (2,5)
- FormalMet - FormalMethods-Formal specification and verification of systems (2,5)
- Netsoft - Wireless Access Technologies (2,5)
- AppIOT - Iot Application Protocols (2,5)
- ProtIOT - Iot Communication Protocols (2,5)

TU Opening [5 ECTS] – 50 hours

- Long technical course (5)
- Short technical course (2,5)
- Student initiative (1)
- Awareness-raising to research (1,5)
- Research Project (5)

TU Social and Human Sciences [4 ECTS] – 42 hours

- Business - Business simulation (4)
- Law - General introduction to law : contracts, setting up a business (2)
- ProjMan – Project Management (4)
- SATT - Sociological Approaches of Telecom Technologies (2)
- TeamLead - Personal Development and Team Leadership (4)

TU Languages [1 ECTS] – 22 hours

DNM. 2 & 3

Semestre 9 [30 ECTS]

TU Advanced Courses in Security [5 ECTS] – 50 hours

- BigSec - Sécurité pour les Big Data et le Cloud (2,5)
- MPC - Calcul multipartite et blockchains (2,5)
- MobiSec - Sécurité des systèmes mobiles et des smartphones (5)

TU Opening [5 ECTS] – 50 hours

- Long technical course (5)
- Short technical course (2,5)
- Student initiative (1)

UE Project [10 ECTS] – 200 hours

TU Social and Human Sciences [4 ECTS] – 42 hours

- Property - Intellectual property law (2)
- B_INNOV: How to adopt the right posture and move from idea to market! (4)
- ManagIntro - Introduction to Management (4)
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- TeamLead - Personal Development and Team Leadership (4)
- CSE - The challenges of a sustainable economy

TU Languages [1 ECTS] – 22 hours

Semester 10 [30 ECTS]

6 months internship