Select list of modules for the certificate “Data Science”

Theoretical area

Name of the module/course	Language	In charge of the course
Channel coding (lecture) **5 LP**	en	Prof. Dr. Giuseppe Caire
Compressive sensing and inverse problems in Signal Processing (lecture + seminar) **5 LP**	en	Prof. Dr. Giuseppe Caire
Deep learning **5 LP**	en	Prof. Dr. Gitta Kutyniok
Information theory (lectures) **5 LP**	en	Prof. Dr. Giuseppe Caire
Kognitive Algorithmen (lecture + tutorial) **5 LP**	dt/en	Prof. Dr. Klaus-Robert Müller
Machine learning 1 (lecture) **5 LP**	dt/en	Prof. Dr. Klaus-Robert Müller
Machine learning 2 (lecture + tutorial) **5 LP**	dt/en	Prof. Dr. Klaus-Robert Müller
Mathematical introduction to compressed sensing (lecture) **10 LP**	dt/en	Prof. Dr. Gitta Kutyniok
Mathematical methods in signal processing and communications (lectures) **5 LP**	en	Prof. Dr. Slawomir Stanczak
Modern signal processing for communications (lectures) **5 LP**	en	Prof. Dr. Slawomir Stanczak
Probabilistic and Bayesian modeling in ML + AI (seminar) **5 LP**	en	Prof. Dr. Manfred Opper
Selected topics in wireless network optimization (lecture) **5 LP**	en	Prof. Dr. Slawomir Stanczak

Application area

Name of the course	Language	In charge of the course
Image und Video Coding I **5 LP**	en	Prof. Dr. Thomas Wiegand
Image and Video Coding II **5 LP**	dt/en	Prof. Dr. Thomas Wiegand
Brain-computer interfacing -basic (lecture + tutorial) **5 LP**	en	Prof. Dr. Benjamin Blankertz
Brain-computer interfacing (lecture + tutorial + practical work) **10 LP**	en	Prof. Dr. Benjamin Blankertz
Data analysis in cyber-physical systems (project work) **5 LP**	dt	Prof. Dr. Roland Jochem
Data engineering (lecture + project work) **5 LP**	en	Prof. Dr. Timo Hartmann
Data science in biotechnology (project work) **5 LP**	en	Prof. Dr. Juri Rappsilber
Datenauswertung in der Mobilitäts- und Verkehrsforschung (lecture + tutorial) **5 LP**	dt	Prof. Dr. Oliver Schwedes
Datenerhebung in der Mobilitäts- und Verkehrsforschung (lecture + tutorial) **5 LP**	dt	Prof. Dr. Oliver Schwedes
Datenkompression (lectures) **5 LP**	dt	Prof. Dr. Thomas Sikora
Digital image processing (lecture + tutorial) **5 LP**	en	Prof. Dr. Olaf Hellwich

Requirements for the Certificate “Data Science”

1. 30 credit points must be achieved to pass the certificate successfully. A maximum of two credit points can be awarded for the visit of BIMoS Days (minimum of two). A bonus credit point can be given for active participation in discussions on BIMoS Days.
2. The final examinations of the individual lectures and courses must be passed successfully.
3. At least two courses of each area, theory and application must be taken.
4. Courses that have been already successfully covered in the field of "Data Science" in the Master's degree can be taken into account. For this purpose, a written application must be submitted to the BIMoS office.

Certificate “Data Science”

Name: _____

Address: _____

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E-Mail: _____

List of the successfully passed courses

Name of the course	Person in charge	Signature	Date

Please observe the notes on the back.

Technische Universität Berlin
Berlin International Graduate School in Model and Simulation based Research