Module name					
Electrical Engineering and Information Technology II					
Module nr. 18-gt-1020	**Credit points** 7 CP	**Workload** 210 h	**Self-study** 135 h	**Module duration** 1 Term	**Module cycle** Summer term
Language German			**Module owner** Prof. Dr.-Ing. Gerd Griepentrog		

1	**Teaching content** Electrostatic fields; stationary electrical flow fields; stationary magnetic fields; temporally variable magnetic fields; capacitor networks, transmission lines
2	**Learning objectives** Upon successful completion of the module the students have detached themselves from the conception that all electrical procedures are line-bound; they have a clear idea of the field term, can read and interpret field plots and also design simple field plots themselves; they understand the difference between a curl and a divergence field, can describe this difference mathematically and are able to recognize the field type from a mathematical description, respectively; they are able to calculate field distributions for simple rotationally symmetric arrangements analytically; they can deal surely with the definitions of the electrostatic, the electrical quasi-static, the magnetostatic and the magneto-electric field; they have recognized the connection and dualism of electricity and magnetism; they control the mathematical apparatus necessary for their description and can apply it to simple examples; they can calculate with nonlinear magnetic circuits; they can compute inductance, capacity and resistance of simple geometrical arrangements and understand them now as physical characteristics of the respective arrangement; they have recognized, how different forms of energy can be transferred into each other and are thereby already able to solve simple scientific engineering problems; they have understood the underlying physical backgrounds for many applications of electrical engineering and are able to describe them mathematically, develop it further in a simple way and apply it to other examples; they are familiar with the system of Maxwell's equations in their integral representation have a first idea of the importance of Maxwell's equations for all conceptual formulations of electrical engineering. They understand the propagation of electromagnetic waves in the free space and on transmission lines for both harmonic ans transient signals.
3	**Recommended prerequisites for participation** Electrical Engineering and Information Technology I
4	**Form of examination** DefaultModule exam: • DefaultModule exam (Technical examination, Examination, DefaultDuration: 120 Min., Default RS)
5	**Prerequisite for the award of credit points** Passing the final module examination
6	**Grading** DefaultModule exam: • DefaultModule exam (Technical examination, Examination, Weighting: 100 %)
7	**Usability of the module** BSc ETiT, BSc MEC, BSc Wi-ETiT, LA Physik/Mathematik, BSc CE, BSc iST
8	**Grade bonus compliant to §25 (2)** Notenverbesserung entsprechend 25 (2) APB TU Darmstadt
9	**References**

- Downloadable slides
- Clausert, Wiesemann, Hinrichsen, Stenzel: „Grundgebiete der Elektrotechnik I und II“; ISBN 978-3-486-59719-6
- Prechtl, A.: „Vorlesungen über die Grundlagen der Elektrotechnik - Band 2“ ISBN: 978-3-211-72455-2

Courses

DefaultCourse nr.	**Course name**		
18-gt-1020-vl	Electrical Engineering and Information Technology II		
Instructor		**Type**	**SWS**
Prof. Dr.-Ing. Gerd Griepentrog		Lecture	3

DefaultCourse nr.	**Course name**		
18-gt-1020-ue	Electrical Engineering and Information Technology II		
Instructor		**Type**	**SWS**
M.Sc. Daniel Großmann, Prof. Dr.-Ing. Gerd Griepentrog		Practice	2