

Module Handbook (<https://modhb.uni-kl.de/>)

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Module EIT-NAT-535-M-7

Introduction to Information and Coding Theory (M, 3.0 LP)

Module Identification

Module Number	Module Name	CP (Effort)
EIT-NAT-535-M-7	<i>Introduction to Information and Coding Theory</i>	3.0 CP (90 h)

Basedata

CP, Effort	3.0 CP = 90 h
Position of the semester	1 Sem. in WiSe
Level	[7] Master (Advanced)
Language	[DE] German
Module Manager	Sauer-Greff, Wolfgang, Dr.-Ing. (WMA DEPT: EIT) (/staff/619/)
Lecturers	Sauer-Greff, Wolfgang, Dr.-Ing. (WMA DEPT: EIT) (/staff/619/)
Area of study	[EIT-NAT] Communications Engineering
Reference course of study	[EIT-88.781-SG#2010] M.Sc. Electrical and Computer Engineering [2010] (/mhb/FB-EIT/cos-556/)
Lifecycle-State	[NORM] Active

Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
2V	EIT-NAT-535-K-7 (/mhb/courses/EIT-NAT-535-K-7/)	P	-	PL1	3.0	WiSe

- About [EIT-NAT-535-K-7]: Title: "Introduction to Information and Coding Theory"; Presence-Time: 28 h; Self-Study: 62 h

Examination achievement PL1

- Form of examination: **written exam (Klausur) (90 Min.)**
- Examination Frequency: each semester

Evaluation of grades

The grade of the module examination is also the module grade.

Contents

From [EIT-NAT-535-K-7] Introduction to Information and Coding Theory (/mhb/courses/EIT-NAT-535-K-7/):

- Informationstheorie
 - Übersicht, Begriffe der Informationstheorie
 - Quellen und Entropie
 - Quellencodierung
 - Kanal, Kanalkapazität
- Codierungstheorie
 - Übersicht, mathematische Grundlagen der Kanalcodierung
 - Lineare Blockcodes
 - Zyklische Codes
 - Reed-Solomon- und BCH-Codes
 - Faltungscodes

Competencies / intended learning achievements

- Verstehen der grundlegenden Konzepte der Informations- und Codierungstheorie
- Kenntnis des Kanalcodierungstheorems und der Kapazität typischer Kanäle
- Kenntnis der wichtigsten Methoden zur Kanalcodierung
- Grundlegende Kenntnisse zur weiteren Vertiefung in diesen Gebieten

Requirements for attendance (informal)

Modules:

- [EIT-NAT-305-M-4] Communications Engineering (M, 5.0 LP) (/mhb/modules/EIT-NAT-305-M-4/)
- [EIT-NAT-315-M-2] Fundamentals of Signals and Systems (M, 5.0 LP) (/mhb/modules/EIT-NAT-315-M-2/)

Requirements for attendance (formal)

None

References to Module / Module Number [EIT-NAT-535-M-7]

Course of Study	Section	Choice/Obligation
[EIT-88.781-SG#2010] M.Sc. Electrical and Computer Engineering [2010] (/mhb/FB-EIT/cos-556/)	Theoretical Part	[P] Compulsory
[EIT-88.781-SG#2010] M.Sc. Electrical and Computer Engineering [2010] (/mhb/FB-EIT/cos-556/)	Theoretical Part	[P] Compulsory
[EIT-88.781-SG#2010] M.Sc. Electrical and Computer Engineering [2010] (/mhb/FB-EIT/cos-556/)	Elective Subjects	[W] Elective Module
[EIT-88.A44-SG#2018] M.Sc. Media and Communication Technology [2018] (/mhb/FB-EIT/cos-568/)	Theory of Media and Communication Technology	[P] Compulsory
[EIT-88.?-SG#2021] M.Sc. Electrical and Computer Engineering [2021] (/mhb/FB-EIT/cos-686/)	Major Communication Technology (KOM)	[P] Compulsory
[EIT-88.?-SG#2021] M.Sc. Electrical and Computer Engineering [2021] (/mhb/FB-EIT/cos-686/)	Technical Elective Modules	[W] Elective Module
[EIT-88.?-SG#2021] M.Sc. Media and Communication Technology [2021] (/mhb/FB-EIT/cos-688/)	Theory of Media and Communication Technology	[P] Compulsory
[INF-88.79-SG] M.Sc. Computer Science (/mhb/FB-INF/cos-536/)	Formal Fundamentals	[WP] Compulsory Elective