Prüfungsordnung des Fachbereichs 2: Informatik und Ingenieurwissenschaften Computer Science and Engineering der Fachhochschule Frankfurt am Main - University of Applied Sciences für den Master-Studiengang Information Technology vom 30.05.2007, geändert am 23.06.2010

Hier: Änderung vom 24.10.2012

Aufgrund des § 44 Abs. 1 Nr. 1 des Hessischen Hochschulgesetzes (HHG) vom 14. Dezember 2009 (GVBl. I S. 666), zuletzt geändert durch Gesetz vom 26. Juni 2012 (GVBl. S. 227), hat der Fachbereichsrat des Fachbereichs 2: Informatik und Ingenieurwissenschaften – Computer Science and Engineering der Fachhochschule Frankfurt am Main –University of Applied Sciences am 24.10.2012 die nachstehende Änderung der Prüfungsordnung für den Master-Studiengang Information Technology beschlossen.

Die Änderung der Prüfungsordnung entspricht den Allgemeinen Bestimmungen für Prüfungsordnungen mit den Abschlüssen Bachelor und Master an der Fachhochschule Frankfurt am Main – University of Applied Sciences (AB Bachelor/Master) vom 10. November 2004 (Staatsanzeiger für das Land Hessen 2005 S. 519), zuletzt geändert am 11. Juli 2012 (veröffentlicht am 25.09.2012 auf der Internetseite in den amtlichen Mitteilungen der Fachhochschule Frankfurt am Main – University of Applied Sciences) und ergänzt sie. Die Änderung der Prüfungsordnung wurde durch das Präsidium am 10. Juni 2014 gemäß § 37 Abs. 5 HHG genehmigt.

Die Genehmigung ist befristet für die Dauer der Akkreditierung bis zum 25.07.2013.

Artikel I: Änderung

1.
§3 erhält folgende neue Fassung:
„Voraussetzungen für eine Immatrikulation sind:
1. Ein erster berufsqualifizierender Hochschulabschluss in Elektrotechnik und Informationstechnik oder einem vergleichbaren Fachgebiet mit einschlägigen Kenntnissen der Kommunikationstechnik aus dem ersten Hochschulstudium, die einen erfolgreichen Abschluss des Studiums „Information Technology" erwarten lassen. Das Studium muss mindestens mit der Gesamtnote "gut" abgeschlossen worden sein. Bei ausländischen Vorbildungsnachweisen gilt die Satzung über das Verfahren der Bewerbung und Zulassung von Studienbewerberinnen und Studienbewerbern mit ausländischen Vorbildungsnachweisen an der Fachhochschule Frankfurt am Main vom 28. Februar 2005.
2. Darüber hinaus kann der Prüfungsausschuss nach einer Einzelprüfung die Zulassung von Bewerbern und Bewerberinnen mit einem Notendurchschnitt höher als 2,5 genehmigen. Gegenstand der Einzelprüfung ist:
(a) Darstellung der besonderen Motivation für die Inhalte des Studiengangs, dargelegt durch ein ausführliches Motivationsschreiben und
(b) 1. einschlägige, besondere Leistungen in der ingenieurmäßigen beruflichen Praxis. Der Nachweis der besonderen Qualifikation kann über ein qualifiziertes Arbeitszeugnis, Arbeitsberichte, Fachaufsätze, Tagungsbeiträge, Patentschriften und Ähnliches erfolgen; oder
(b) 2. eine inhaltlich einschlägige und mindestens „gut" bewertete Abschlussarbeit im ersten Hochschulstudium; oder
(b)3. besondere grundlegende Kenntnisse der Elektrotechnik und einschlägige Kenntnisse der Kommunikationstechnik aus dem ersten Hochschulstudium, die einen erfolgreichen Abschluss des Studiums „Information Technology" erwarten lassen.
3. Nachweislich gute Kenntnisse der englischen Sprache. Der Prüfungsausschuss beschließt über Art und Umfang des Nachweises in Orientierung an der Satzung über

das Verfahren der Bewerbung und Zulassung von Studienbewerberinnen und Studienbewerbern mit ausländischen Vorbildungsnachweisen an der Fachhochschule Frankfurt am Main vom 28. Februar 2005."

2.
§ 4 Abs. 1 erhält folgende neue Fassung:
„ Das Studienprogramm enthält 19 Module. Es umfasst 17 Pflichtmodule und die beiden Wahlpflichtmodule Optional Technical Subject 1 und Optional Technical Subject 2. In jedem dieser beiden Wahlpflichtmodule erfolgt die Wahl aus dem jeweiligen Angebot mit der Anmeldung zur Prüfung. Die Wahl wird nach Ablauf des Rücknahmezeitraumes verbindlich; ein Wechsel in ein anderes Wahlpflichtmodul ist nicht mehr möglich.

3.
In §5 wird als Satz 2 folgender Satz eingefügt:„Das Modul Master-Thesis kann nur einmal wiederholt werden."

4.
In § 7 Abs. 2 wird der Verweis auf„ §14 Abs. 5" durch den Verweis auf „§15 Abs. 5" ersetzt.

5.
§8 Abs. 1 erhält folgende neue Fassung:
„(1)Das Zeugnis über die Masterprüfung enthält die Module mit Modulnoten und ECTS-Punkten, das Thema der Master-Thesis mit Note und erworbenen ECTS-Punkten, die Anzahl der gesamt erworbenen ECTS-Punkte (Credits) und die Gesamtnote der Masterprüfung."

 6.
Anlage 1 zur Prüfungsordnung des Master-Studiengangs Information Technology vom 30.05.2007 – **Modulübersicht zum Master-Studiengang Information Technology** wird wie folgt neu gefasst:
„ Anlage 1 Modulübersicht - Outline of the modules for the Master course in Information Technology

1st semester	2nd. semester	3rd semester	4th semester
Vector Analysis (1)	Digital Baseband Transmission and Modulation Methods (6)	Mobile Computing (8)	Master Thesis and Colloquium (19)

Stochastic Signals and Systems (2)	Distributed Systems and Computer Networks (7)	Optional Technical Subject 2 (11.1,11.2, 11.3)	
Methods, Systems and Networks for Digital Communication (3)	Digital Switching and Routing (9)	Automation Laboratory (13)	
Circuit Design for Communication Systems (4)	Field Theory for Optical and Microwave Communication Systems (10)	Computational Intelligence (14)	
Software Engineering (5)	Image Processing and Identification of Dynamic Systems (12)	Autonomous Intelligent Systems (15)	
International Project Management and Business Administration (17)	Optional Technical Subject 1 (16.1, 16.2, 16.3)	Project (18)	

7.
Anlage 2 zur Prüfungsordnung des Master-Studiengangs Information Technology vom 30.05.2007 – **Modultafel des Master-Studiengangs Information Technology** wird wie folgt neu gefasst:

"Anlage 2 Modultafel – Module Overview for the Master course in Information Technology

(Semester – Module – ECTS – Dauer – Lehrform – Prüfungsform – Sprache d. Moduls – SWS)

Sem.	Module title	ECTS	Duration [Sem]	Teaching method	Examination method	Language	Contact hours per week
1	M1 Vector Analysis	5	1	Lecture, Exercise	Written examination 90 minutes	English	4
1	M2 Stochastic Signals and Systems	5	1	Lecture, Exercise	Written examination 90 minutes	English	4
1	M3 Methods, Systems and Networks for Digital Communication	5	1	Lecture, Exercise	Written examination 90 minutes	English	4
1	M4 Circuit Design for Communication Systems	5	1	Lecture, Exercise	Written examination 90 minutes	English	4
1	M5 Software Engineering	5	1	Lecture, Project	Project (duration 5 months)	English	3
2	M6 Digital Baseband Transmission and Modulation Methods	5	1	Lecture, Exercise	Written examination 90 minutes	English	4
2	M7 Distributed Systems and Computer Networks	5	1	Seminar lecture	Written examination 90 minutes	English	4
3	M8 Mobile Computing	5	1	Lecture, Project	Written project documentation and presentation (min. 10 max. 20 min.)	English	3
2	M9 Digital Switching an Routing	5	1	Lecture, Labor	Written examination 90 minutes	English	3
2	M10 Field Theory for Optical and Microwave Systems	5	1	Lecture, Exercise	Written examination 90 minutes	English	4
3	M11.1 Engineering of Optical Systems	5	1	Lecture, Project	Written project documentation and presentation (min. 10 max. 20 min.)	English	3
3	M11.2 Engineering of Microwave Systems	5	1	Lecture, Project	Written project documentation and presentation (min. 10 max. 20 min.)	English	3
3	M11.3 Digital Control System Design	5	1	Lecture, Laboratory	Written examination 90 minutes	English	3
2	M12 Image Processing and Identification of Dynamic Systems	5	1	Lecture, Exercise	Written examination 90 minutes	English	5
3	M13 Automation Laboratory	5	1	Project	Project (duration 5 months)	English	1

Sem.	Module title	ECTS	Duration [Sem]	Teaching method	Examination method	Language	Contact hours per week
3	M14 Computational Intelligence	5	1	Seminar lecture	Written assignment (duration 6 weeks) and oral presentation (min. 45 max. 60 minutes)	English	4
3	M15 Autonomous Intelligent Systems	5	1	Lecture, Project	Project (duration 5 months)	English	3
2	M16.1 Numerical Field Theory	5	1	Seminar lecture	Colloquium with presentation (min. 10, max. 20 minutes)	English	3
2	M16.2 Modern Control Theory	5	1	Lecture	Written examination 90 minutes	English	3
2	M16.3 Wireless System Design	5	1	Lecture, Laboratory	Project result, documentation (total workload 90 h), presentation (min. 10 max. 20 min.)	English	3
1	M17 International Project Management and Business Administration	5	1	Lecture	Written examination 90 minutes	English	4
3	M18 Project	5	1	Project	Project (duration 5 months)	English	2
4	M19 Master Thesis with Colloquium	30	1	Self-study project	Master Thesis, Colloquium	English	6

8.
Anlage 3 zur Prüfungsordnung des Master-Studiengangs Information Technology vom 30.05.2007 – **Modulbeschreibungen zum Master-Studiengang Information** Technology wird wie folgt geändert:

a. Die Überschrift erhält folgende neue Fassung:
„ Anlage 3 Modulbeschreibungen – Description of the modules for the Master course in Information Technology"
b. Die Vorlage für die Modulbeschreibungen wird wie folgt geändert:

Module title	
Module number	
Study programme	
Applicability of the module to other study programmes	
Duration of the module	
Status of the module	
Recommended semester during the study programme	
Credit points (Cp) of the module	
Prerequisites for module participation	
Prerequisites for module examination	
Module examination	
Intended learning outcomes /acquired competences of the module	
Contents of the module	
Teaching methods of the module	
Total workload	
Language of the module	
Frequency of the module	

c. Aufgrund der Änderung der Vorlage für die Modulbeschreibung erhalten die Modulbeschreibungen für die Module 4, 5, 6,7, 10, 12, 13, 17, 18 und 19 folgende neue Fassung:

Module description of Module 4

Study programme	Information technology
Module title	Circuit Design for Communication Systems
Module number	4
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	1
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Written examination, 90 minutes, English
Intended learning outcomes /acquired competences of the module	By the end of the course, students are able - to understand the underlying technology of communication systems. - to compare technical solutions for their merits in terms of functional and non-functional requirements, within the domain of communication systems. - to select and apply suitable techniques of analysis and design to develop a good technical solution. - to exercise professional responsibility in designing and assessing the effectiveness of solutions developed.
Contents of the module	Lectures and exercises in Circuit Design for Communication Systems
Teaching methods of the module	Lectures and exercises

Total workload	150 h
Language of the module	English
Frequency of the module	Every winter semester

Module description of Module 5

Study programme	Information technology
Module title	Software Engineering
Module number	5
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	1
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Project, processing time one semester
Intended learning outcomes /acquired competences of the module	On successful completion of the course the student will be familiar with software engineering techniques. He/she will have achieved the ability to perform software projects and to manage software development teams.
Contents of the module	Lecture in Software Engineering Project in Software Engineering
Teaching methods of the module	Lectures and exercises
Total workload	150 h
Language of the module	English
Frequency of the module	Every winter semester

Module description of Module 6

Study programme	Information Technology
Module title	Digital Baseband Transmission and Modulation Methods
Module number	6
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	2
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Written examination 90 minutes, English
Intended learning outcomes / acquired competences of the module	On successful completion of the subject the student will have a thorough understanding of the methods of digital baseband transmission and modulation techniques for transmission systems. He will be able to specify the system architecture, the hardware and the software structure of transmission nodes.
Contents of the module	Lectures combined with exercises in Digital Baseband Transmission and Modulation Methods
Teaching methods of the module	Lectures combined with exercises
Total workload	150 h
Language of the module	English
Frequency of the module	Every summer semester

Module description of Module 7

Study programme	Information technology
Module title	Distributed Systems and Computer Networks
Module number	7
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	2
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Written examination, 90 minutes, English
Intended learning outcomes /acquired competences of the module	On successful completion of the subject the Student achieves the ability to analyze, design, validate and operate distributed systems and computer networks.
Contents of the module	Distributed Systems and Computer Networks
Teaching methods of the module	Seminar
Total workload	150 h
Language of the module	English
Frequency of the module	Every summer semester

Module description of Module 10

Study programme	Information Technology
Module title	Field Theory for Optical and Microwave Systems
Module number	10
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	2
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Written examination, 90 minutes, English
Intended learning outcomes /acquired competences of the module	By the end of the course, students are able to: explain Maxwell's Equations formulate all boundary conditions formulate and solve the wave equation of a plane wave classify different wave solutions explain the modes of rectangular and circular waveguides find solutions of a dielectric slab waveguide explain the weakly guided solutions of cylindrical optical waveguides
Contents of the module	Lectures and exercises in Field Theory for Optical and Microwave Systems
Teaching methods of the module	Lectures combined with exercises
Total workload	150 h

Language of the module	English
Frequency of the module	Every summer semester

Module description of Module 12

Study programme	Information Technology
Module title	Image Processing and Identification of Dynamic Systems
Module number	12
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	2
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Written examination, 90 minutes, English
Intended learning outcomes /acquired competences of the module	On successful completion of the subject image processing the student will have a thorough knowledge in image processing. He/she will be able to plan and operate image processing and real world conditions. On successful completion of the unit identification of dynamic systems the student has got an inside view of system identification and classification methods. He/she will be able to use basic methods of signal and process modelling to detect faults, failures and malfunctions. He will be able to work with fault diagnosis systems using a basic knowledge of classification methods.
Contents of the module	Lectures and Exercises in Image Processing Lectures and Exercises in Identification of Dynamic Systems
Teaching methods of the module	Lecture
Total workload	150 h
Language of the module	English

Frequency of the module	Every summer semester

Module description of Module 13

Study programme	Information Technology
Module title	Automation Laboratory
Module number	13
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	3
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Project (duration 5 months)
Intended learning outcomes /acquired competences of the module	Qualification to do independent practical work on intelligent systems in automation. The student will be able to analyse, to specify and to develop intelligent systems for automation tasks.
Contents of the module	Project Automation Laboratory
Teaching methods of the module	Project
Total workload	150 h
Language of the module	English
Frequency of the module	Every winter semester

Module description of Module 17

Study programme	Information Technology
Module title	International Project Management and Business Administration
Module number	17
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	1
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Written examination, 90 minutes
Intended learning outcomes /acquired competences of the module	On successful completion of the subject the student will have the ability to plan, organize and execute complex international technical projects and will be familiarized with the structure and essential functions of operations.
Contents of the module	Lectures in International Project Management Lectures in Business Administration
Teaching methods of the module	Lectures
Total workload	150 h
Language of the module	English
Frequency of the module	Every summer semester

Module description of Module 18

Study programme	Information Technology
Module title	Project
Module number	18
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	3
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Project (duration 5 months)
Intended learning outcomes /acquired competences of the module	On successful completion of the subject the student will be able to do requirements engineering and to evolve problem solution strategies. He/she will be able to present technical projects.
Contents of the module	Project
Teaching methods of the module	Project
Total workload	150 h
Language of the module	English
Frequency of the module	Every winter semester

Module description of Module 19

Study programme	Information Technology
Module title	Master Thesis with Colloquium
Module number	19
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	4
Credit points (CP) of the module	30
Prerequisites for module participation	Successful completion of Modules 1 to 18
Prerequisites for module examination	None
Module examination	Documentation (5 months) and colloquium, min. 30, max.45 minutes
Intended learning outcomes /acquired competences of the module	On successful completion of the master thesis the student acquires the ability to plan, organize, develop, operate and present all kinds of information technology systems due to real world requirements.
Contents of the module	Master Thesis
Teaching methods of the module	Project
Total workload (in the case of bachelor or master thesis, description of the workload is needed for the colloquium)	900 h
Language of the module	English
Frequency of the module	Every semester

d) Im Modul 1 „Vector Analysis" wird die Angabe in der „Educational objectives/Capabilities" geändert in:

„By the end of the course, students are able to: Calculate scalar, vector and tensor products. Find the vector equations of lines and planes. Understand the parametric equations of curves and surfaces. Find the gradient of a function. Find the divergence and curl of a vector field. Use the gradient operator to calculate the directional derivative of a function. Understand the various integral theorems relating line, surface and volume integrals. Transfer mathematical knowledge to describe engineering problems. "
Die Modulbeschreibung erhält folgende neue Fassung:

Study programme	Information technology
Module title	Vector Analysis
Module number	1
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	1
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Written examination, 90 minutes
Intended learning outcomes /acquired competences of the module	By the end of the course, students are able to: Calculate scalar, vector and tensor products. Find the vector equations of lines and planes Understand the parametric equations of curves and surfaces. Find the gradient of a function. Find the divergence and curl of a vector field Use the gradient operator to calculate the directional derivative of a function. Understand the various integral theorems relating line, surface and volume integrals. Transfer mathematical knowledge to describe engineering problems.

Contents of the module	Lectures and exercises in Vector Analysis
Teaching methods of the module	Lectures and exercises
Total workload	150 h
Language of the module	English
Frequency of the module	Every winter semester

e. Im Modul 2 „Stochastic Signals and Systems" wird die Angabe in der Zeile „Educational objectives/Capabilities" geändert in:
„On successful completion of the course the student will have a thorough understanding of the mathematical presentation of random processes and will be able to perform technical and mathematical design of random signals processing systems."
Die Modulbeschreibung erhält folgende neue Fassung:

Study programme	Information technology
Module title	Stochastic Signals and Systems
Module number	2
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	1
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Written examination, 90 minutes
Intended learning outcomes /acquired competences of the module	On successful completion of the course the student will have a thorough understanding of the mathematical presentation of random processes and will be able to perform technical and mathematical design of random signals processing systems.

Contents of the module	Lectures and exercises in Stochastic Signals and Systems
Teaching methods of the module	Lectures combined with exercises
Total workload	150 h
Language of the module	English
Frequency of the module	Every winter semester

f. Im Modul 3 „ Methods, Systems and Networks for Digital Communication" wird die
Angabe in der Zeile „Educational objectives/Capabilities" geändert in:
„On successful completion of the subject the student will have a thorough understanding
of the functionalities and architectures of modern telecommunication systems and
networks. He will be able to analyse different network technologies and to specify
network nodes and architectures. Students will learn to identify correlations in complex
systems, system analysis capability."

Die Modulbeschreibung erhält folgende neue Fassung:

Study programme	Information Technology
Module title	Methods, Systems and Networks for Digital Communication
Module number	3
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	1
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Written examination, 90 minutes
Intended learning outcomes /acquired competences of the	On successful completion of the subject the student will have a thorough understanding of the functionalities and architectures of

module	modern telecommunication systems and networks. He will be able to analyse different network technologies and to specify network nodes and architectures.
	Students will learn to identify correlations in complex systems, system analysis capability.
Contents of the module	Lectures and exercises in Methods, Systems and Networks for Digital Communication.
Teaching methods of the module	Lectures combined with exercises
Total workload	150 h
Language of the module	English
Frequency of the module	Every winter semester

g. Im Modul 8 „Mobile Computing" wird die Angabe in der Zeile „Educational objectives/Capabilities" geändert in:
„On successful completion of the subject the student will have a thorough understanding of the fundamentals of Mobile Computing, types of mobility, mobility support, protocols, network architectures, and selected areas of applications.
The student improves the key skills: Project work, team work, documentation, and presentation."
Die Angabe in der Zeile „ Module examination" wird geändert in:
„Project result, documentation (total workload 105 h), presentation (min. 10 max. 20 min.)"
Die Modulbeschreibung erhält folgende neue Fassung:

Study programme	Information Technology
Module title	Mobile Computing
Module number	8
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester during the study programme	3
Credit points (CP) of the module	5
Prerequisites for module	None

participation	
Prerequisites for module examination	None
Module examination	Project result, documentation (total workload 105 h), presentation (min. 10 max. 20 min.)"
Intended learning outcomes /acquired competences of the module	On successful completion of the subject the student will have a thorough understanding of the fundamentals of Mobile Computing, types of mobility, mobility support, protocols, network architectures, and selected areas of applications. The student improves the key skills: Project work, team work, documentation, and presentation.
Contents of the module	Lectures in Mobile Computing Mobile Computing Project.
Teaching methods of the module	Lectures Project
Total workload	150 h
Language of the module	English
Frequency of the module	Every summer semester

h. Im Modul 9 „Digital Switching and Routing" wird die Angabe in der „Educational objectives/Capabilities" geändert:
„On successful completion of the subject the student will have a thorough understanding of the development, planning and operating of switching and routing systems. He will be able to analyse, to specify and to develop protocols and network nodes for switching and routing. Key skills: Identifying of correlations in complex systems, system analysis capability, system optimization, team work.
Die Modulbeschreibung erhält folgende neue Fassung:

Study programme	Information Technology
Module title	Digital Switching and Routing
Module number	9
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module
Recommended semester	2

during the study programme	
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	written reports for all 3 exercises (total workload 75h)
Module examination	Written examination, 90 minutes
Intended learning outcomes /acquired competences of the module	On successful completion of the subject the student will have a thorough understanding of the development, planning and operating of switching and routing systems. He will be able to analyse, to specify and to develop protocols and network nodes for switching and routing Key skills: Identifying of correlations in complex systems, system analysis capability, system optimization, team work
Contents of the module	Lectures in Digital Switching and Routing Digital Switching and Routing Laboratory
Teaching methods of the module	Lectures combined with exercises Lab experiments
Total workload	150 h
Language of the module	English
Frequency of the module	Every summer semester

i. Nach dem Modul 10 „Field Theory for Optical and Microwave Systems" wird das
bisherige Modul 11: Engineering of Optical and Microwave Systems zu einem
Wahlpflichtmodul und erhält als Modul 11.1 Engineering of Optical Systems folgende
neue Fassung:

"Module description of Module 11.1

Study programme	Information Technology
Module title	Engineering of Optical Systems
Module number	11.1
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Elective module
Recommended semester during	3

the study programme	
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Written documentation of project result (105 h) and presentation (min. 15 max. 20 minutes)
Intended learning outcomes /acquired competences of the module	Students gain knowledge of different system architectures in the field of optics. They understand the design process and the requirements of the selected system architectures and are qualified to do independent work in electromagnetic field theory in the domain of optics.
Contents of the module	Lectures in Engineering of Optical and Systems Engineering of Optical and Systems Project
Teaching methods of the modul	Lectures and Project
Total workload	150 h
Language of the module	English
Frequency of the module	Annually

j. Als Wahlpflichtmodule werden folgende Module als Modul 11.2 Engineering of Microwave Systems und als Modul 11.3 Digital Control System Design neu eingefügt:

"Module description of Module 11.2

Study programme	Information Technology
Module title	Engineering of Microwave Systems
Module number	11.2
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Elective module
Recommended semester during the study programme	3
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Written documentation of project result (105 h) and presentation (min. 15 max.20 minutes)
Intended learning outcomes /acquired competences of the module	Students gain knowledge of different system architectures in the field of microwave. They understand the design process and the requirements of the selected system architectures and are qualified to do independent work in electromagnetic field theory in the domain of microwaves.

Contents of the module	Lectures in Engineering of Microwave Systems Engineering of Microwave Systems Project
Teaching methods of the module	Lectures and Project
Total workload	150 h
Language of the module	English
Frequency of the module	Annually

Module description of Module 11.3

Study programme	Information Technology
Module title	Digital Control System Design
Module number	11.3
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Elective module
Recommended semester during the study programme	3
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	Written laboratory work documentation (90 h)
Module examination	Written examination, 90 minutes
Intended learning outcomes /acquired competences of the module	On successful completion of the subject the students will be able to design digital control systems using digital controllers with individually designed control algorithms. The students will be able to choose the correct algorithm and suite it to a given engineering project.
Contents of the module	Lectures in Digital Control System Design Laboratory in Digital Control System Design
Teaching methods of the modul	Lectures and Laboratory
Total workload	150 h
Language of the module	English
Frequency of the module	Annually

k. Im Modul 14 „Computational Intelligence" wird die Angabe in der Zeile „Module examination" wie folgt neu gefasst:
„Written assignment (processing duration 6 weeks) and oral presentation (min. 45, max. 60 minutes)."

l. Nach dem Modul 14 „Computational Intelligence" wird das bisherige Modul 15 „Intelligent Sensors Technology" gestrichen und als Modul 15 „Autonomuos Intelligent Systems" folgendes neues Modul eingefügt:

Module description of Module 15

Study programme	Information Technology
Module title	Autonomous Intelligent Systems
Module number	15
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Compulsory module

Recommended semester during the study programme	3
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Project (Duration 5 months)
Intended learning outcomes /acquired competences of the module	The student will have a thorough knowledge regarding the architecture, hardware and software of autonomous systems. He is familiar with intelligent algorithms and their application in intelligent sensors, action planning and decision making.
Contents of the module	Lectures in Autonomous Intelligent Systems Project in Autonomous Intelligent Systems
Teaching methods of the module	Lecture and project
Total workload	150 h
Language of the module	English
Frequency of the module	Annually

m. Im Modul 16.1 „Numerical Field Theory with C++" wird die Angabe in Zeile "„Educational objectives/Capabilities" geändert in:
„Students will qualify to do independent work in electromagnetic field theory in the domain of optics and microwaves. They will extend their knowledge of different numerical techniques e.g. "Moment Method" to solve electromagnetic boundary problems."
Die Angabe in Zeile „Module examination" wird geändert in:
„Colloquium with presentation (min. 10, max. 20 minutes)"
Die Modulbeschreibung erhält folgende neue Fassung:

Module description of Module 16.1

Study programme	Information Technology
Module title	Numerical Field Theory with C++
Module number	16
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Elective module
Recommended semester during the study programme	2
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module	None

examination	
Module examination	Colloquium with presentation (min. 10, max. 20 minutes)
Intended learning outcomes /acquired competences of the module	Students will qualify to do independent work in electromagnetic field theory in the domain of optics and microwaves. They will extend their knowledge of different numerical techniques e.g. "Moment Method" to solve electromagnetic boundary problems.
Contents of the module	Seminar in Numerical Field Theory with C++
Teaching methods of the modul	Seminar
Total workload	150 h
Language of the module	English
Frequency of the module	Annually

n. Im Modul 16.2 „Modern Control Theory" wird die Angabe in Zeile „Educational objectives/Capabilities" geändert in:
„On successful completion of the subject the student will understand state space methods, be able to compare them with classical methods and apply them in control system analysis and design."
Die Angabe in Zeile „Module examination" wird geändert in:
„ Written examination, 90 minutes "
Die Modulbeschreibung erhält folgende neue Fassung:

Module description of Module 16.2

Study programme	Information Technology
Module title	Modern Control Theory
Module number	16
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Elective module
Recommended semester during the study programme	2
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	None
Module examination	Written examination, 90 minutes
Intended learning outcomes /acquired competences of the module	On successful completion of the subject the student will understand stat space methods, be able to compare them with classical methods and apply them in control system analysis and design.
Contents of the module	Lectures in Modern Control Theory
Teaching methods of the modul	Lecture
Total workload	150 h

Language of the module	English
Frequency of the module	Annually

o. Nach dem Modul 16.2 „Modern Control Theory" wird das bisherige Modul 16.3 „Digital Control System Design" gestrichen und als Modul 16.3 „Wirelesss System Design" folgendes neues Modul eingefügt:

Module description of Module 16.3

Study programme	Information Technology
Module title	Wireless System Design
Module number	16
Applicability of the module to other study programmes	
Duration of the module	1 semester
Status of the module	Elective module
Recommended semester during the study programme	2
Credit points (CP) of the module	5
Prerequisites for module participation	None
Prerequisites for module examination	Written laboratory work documentation (total workload 90 h)
Module examination	Project result, documentation (total workload 90 h), presentation (min. 10 max. 20 minutes)
Intended learning outcomes /acquired competences of the module	On successful completion of the subject the students will be able to design wireless systems in terms of coverage, availability and roll-out planning. (Professional skills 80%) The students will be able to choose the appropriate tools and algorithms and suite the conceptual system design to a given project. (Key skills 20%)
Contents of the module	Lectures with integrated exercises in Wireless System Design
Teaching methods of the module	Laboratory in Wireless System Design
Total workload	Lectures with integrated exercises and Laboratory
Language of the module	150 h
Frequency of the module	English

Artikel II: Inkrafttreten

Die Änderung tritt am 01.09.2012 zum Wintersemester 2012/13 in Kraft und wird in einem zentralen Verzeichnis auf der Internetseite der Fachhochschule Frankfurt am Main – University of Applied Sciences veröffentlicht.

Frankfurt am Main, _____

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