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Le LMD en Grande Bretagne et Allemagne (The Bologna process in the UK and Germany)

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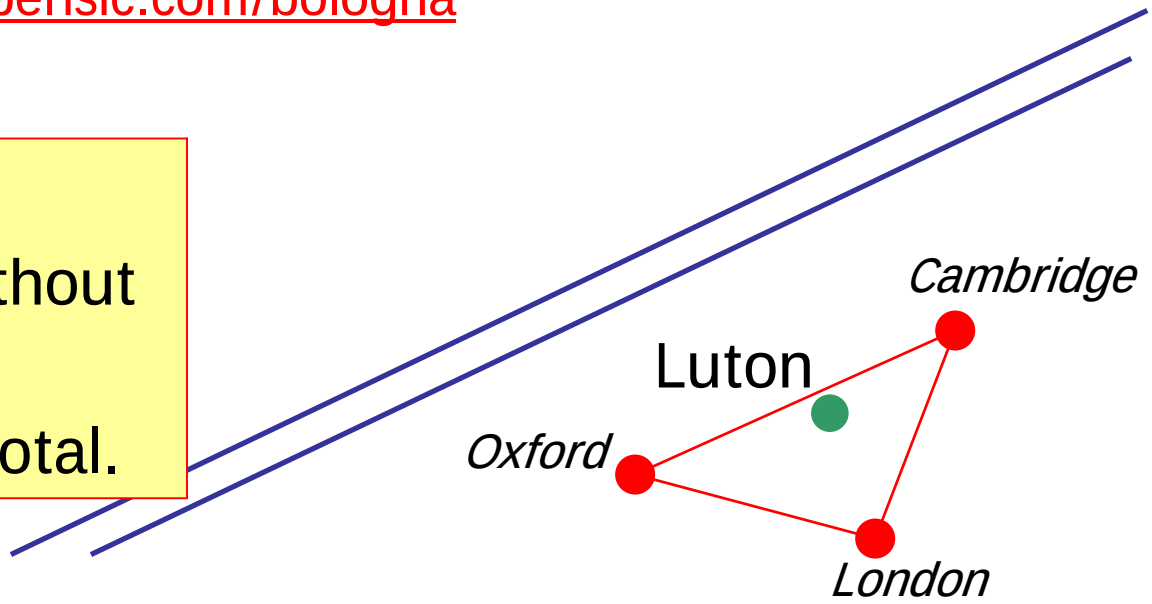
  - These slides are available at:
    - http://perisic.com/bologna

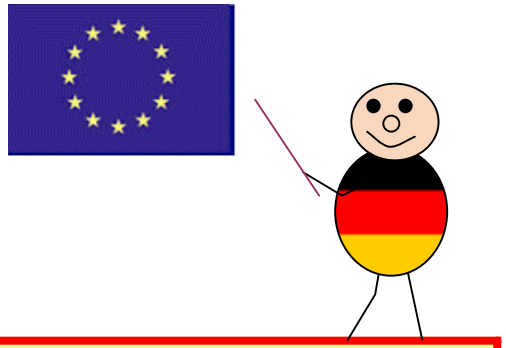
- Disclaimer:
- All information without warranty.
- Evidence is anecdotal.



Some words about me

- Born & PhD in Germany (Saarland)
  - (Mathematics)
- Since January 2001: England, first in Southampton, later in Luton
  - (Computer Science)
- Currently Senior Lecturer at the University of Luton.
    - http://luton.ac.uk
- Contacts to the Saarland (2x) and Brandenburg (all in Germany).
    - http://www.fh-brandenburg.de
    - http://www.htw-saarland.de/
    - http://www.uni-sb.de

Overview



- Introduction
- BSc degrees
- Modularization
- Module descriptions
- MSc / Master
- 10 steps towards an international degree.

4 Some general observations about Curriculum Development in Germany/England

- England:
  - Driven by: Job market (employer needs), competition between (British) universities for students (also overseas), also BCS (British Computer Society)

International => China, India, ...

- Germany:
  - Driven by the HRK (Hochschulrektorenkonferenz) and academic demands, influence of employers is increasing.

International => Teaching in English Language

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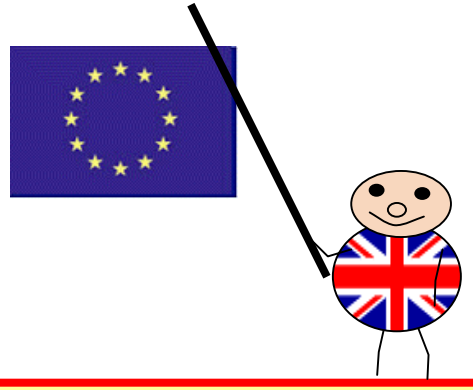
From the National Reports 2005 (http://www.bologna-bergen2005.no/)

- "The UK has had a high level of engagement in seminars and debates relating to Bologna, and is closely involved in developing the Bologna Process. The basic structure of UK degrees already conforms to the Bologna model of three main cycles of Bachelors, Masters and Doctoral degrees." (UK)
- "Germany's *Länder* (states) aim to switch to the two-cycle system by 2009/2010. Bachelors and Masters courses currently constitute some 26.3 per cent of available degree programmes." (Germany)

Overview



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We are now here.

7 BSc (hons) degrees England (Luton)

- But same modules are used in different degrees (advantage of modularisation).

- Lots of degrees, e.g. (2004)
  - Computer Science
  - Computer Games Development
  - Computer Graphics
  - Computer Networking
  - Computing (semester 2 start)
  - Computing & Information Technology (part-time)
  - Information Systems Development
  - Internet Computing
  - Software Engineering

This list is likely to change next year (e.g. Mobile Computing) and in the following years.

8 BSc degrees Germany (better: B. Sc.)

- FH Brandenburg
  - Informatik
  - Medieninformatik (online)
  - Computing and Media (international)
- HTW Saarbrücken
  - Kommunikationsinformatik
- Universität des Saarlandes
  - BSc Informatik

This list is comparatively stable. New programmes may be added following a lengthy process

- Small number of programmes
- Very distinctive

Example: FH Brandenburg, Computing

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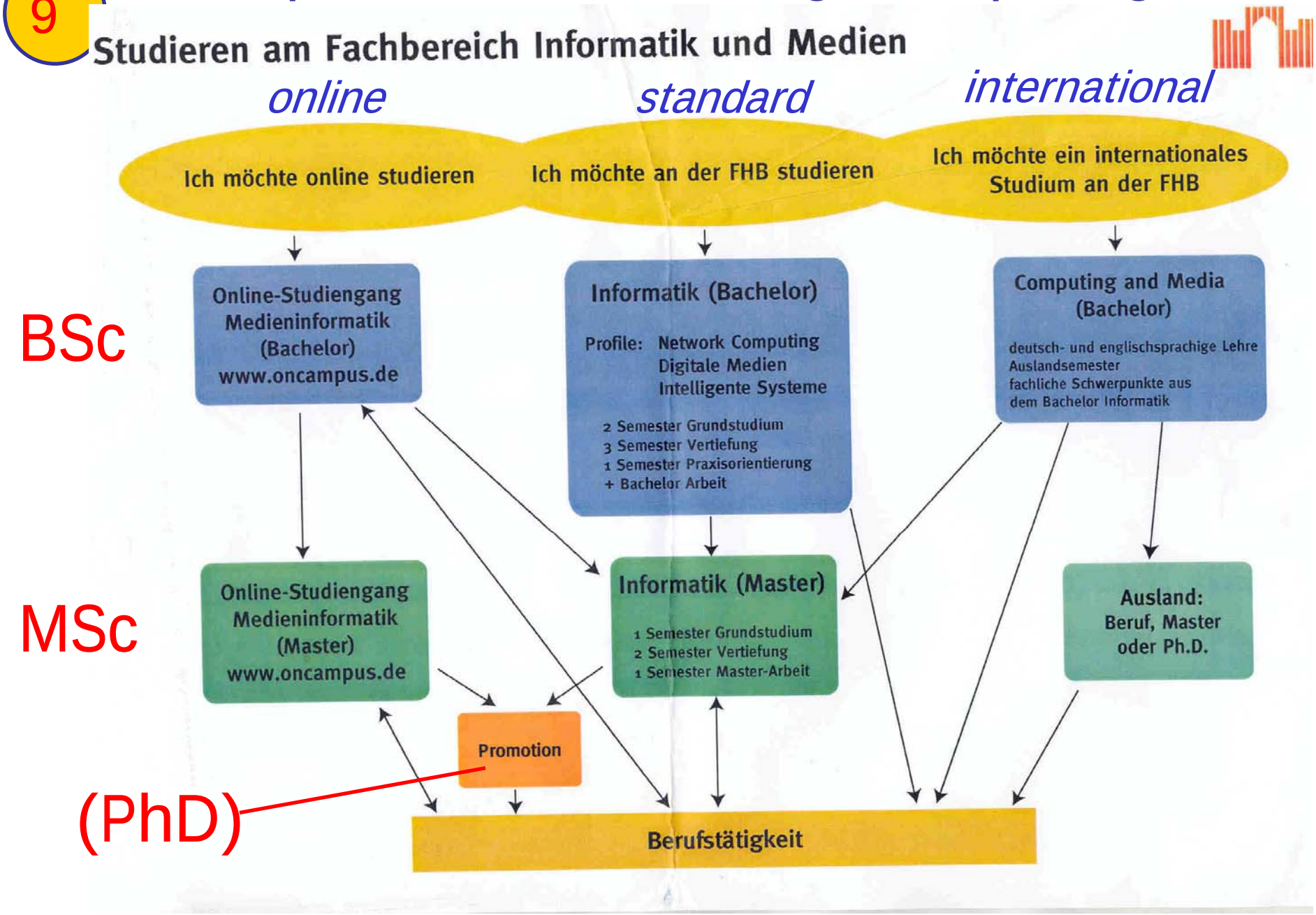

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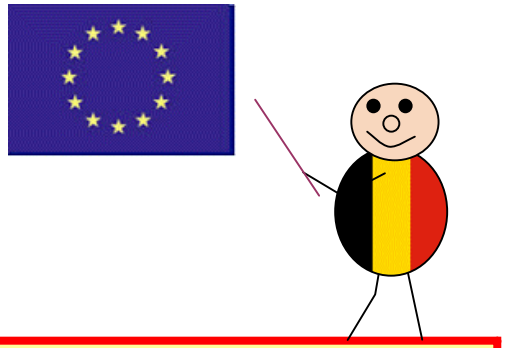
BSc Curricula: England vs. Germany

- Naming:
  - BSc (hons) [England] vs. BSc [Germany]
- Number of courses per University
- England: Frequent change in programmes; driven by market demand.
- Germany: Programmes driven by academic research and new technologies.

Overview



This is the next topic

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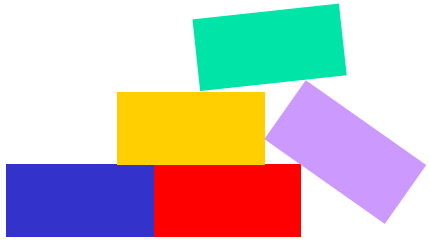
Modularisation



- Modularisation is a key issue in the Bologna process.
- Modules may be considered as the building blocks that are used to make a degree.
- However we will see in the following that there are different ideas on what a module exactly is.

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Example: BSc (hons) Computer Science, Luton

Semester 1

Semester 2

Modules for BSc Level 1 **Cor** Level 2 Level 3

	Level 1 (8 modules)	**Level 2** (8 modules incl Scheme)	**Level 3** (8 modules)
SEMESTER 1			
Core Core	Introduction to Programming – Java **(CIS91-1)** Systems Modelling, Tools and Techniques **(CIS92-1)** CIS Scheme Module **(SCH99-1)** CIS PPAD **(CIS01-1)**	Object Oriented Program Development **(CIS41-2)** Systems Architecture **(CIS61-2)** Networking **(CIS06-2)**	Project **(CIS00-3)** Distributed Software Technologies **(CIS69-3)** IT Project Management **(CIS12-3)**
Options Options		Database Developments **(CIS73-2)** Concepts of AI **(CIS51-2)**	Decision Support Systems **(CIS13-3)** Managing Networks **(CIS18-3)** E-Commerce Tools & Techniques **(CIS74-3)**
SEMESTER 2			
Core Core	Introduction to Programming – Java **(CIS91-1)** Systems Modelling, Tools and Techniques **(CIS92-1)** Data Communications **(CIS03-1)** Databases **(CIS70-1)**	PDP **(CISPP-2)** Operating Systems **(CIS57-2)** Comparative Languages **(CIS05-2)**	Project **(CIS00-3)** Object Oriented Software Development **(CIS50-3)**
Options Options		Internet Programming **(CIS63-2)** Search & Control in AI **(CIS58-2)**	Systems Administration **(CIS26-3)** Web Database Systems **(CIS10-3)**

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Luton

Modules for BSc Honours award in Computer Science

	Level 1	Level 2	Level 3
SEMESTER 1			
Core	Introduction to Programming – Java	Object Oriented Program Development **(CIS41-2)** …Architecture …ng **(CIS06-2)**	Project **(CIS00-3)** Distributed Software Technologies **(CIS69-3)** IT Project Management **(CIS12-3)**
		…Developments …of AI **(CIS51-2)**	Decision Support Systems **(CIS13-3)** Managing Networks **(CIS18-3)** E-Commerce Tools & Techniques **(CIS74-3)**
		…SPP-2) …g Systems	Project **(CIS00-3)** Object Oriented Software Development **(CIS50-3)**
Core	Systems Modelling, Tools and Techniques **(CIS92-1)**	Comparative Languages **(CIS05-2)**	
Op…			
C…			

- 8 modules in every level.
- “long slim” modules in level 1 (modules that are running the full year carrying 30 credits (=15 ECTS)
- any other module carries 15 credits (=7.5 ECTS) per semester, except project module (15 ECTS in level 2, semester 2)
- Optional modules in level 2 and 3

Semester 2

- On BSc level:
- 2 credits = 1 ECTS
- 360 credits = 1 BSc (hons) degree

Example: BSc Kommunikationsinformatik at HTW Saarland

3 **Module des Bachelor-Studiums**

Studienplan des Grundstudiums

1. Semester 24 SWS; 30 LP	Mathematik 1 6 SWS, 8 LP KI 160	Physikalisch-technische Grundl. d. IT 1 4 SWS, 5 LP KI 120	Programmierung 1 6 SWS, 8 LP KI 100	Informatik 1/2 8 SWS, 10 LP KI 210	BWL 4 SWS, 4 LP KI 270	Englisch 6 SWS, 6 LP KI 390
2. Semester 24 SWS; 30 LP	Mathematik 2 6 SWS, 8 LP KI 260	Physikalisch-technische Grundl. d. IT 2 4 SWS, 5 LP KI 220	Programmierung 2 6 SWS, 8 LP KI 200			
3. Semester 26 SWS; 30 LP	Mathematik 3 4 SWS, 5 LP KI 360	Nachr.technik 4 SWS, 5 LP KI 330	Digitaltechnik 4 SWS, 4 LP KI 370	Rechnernetze 4 SWS, 4 LP KI 320	Softwaretech. 1 4 SWS, 5 LP KI 300	Datenbanken 4 SWS, 5 LP KI 310

Studienplan des Hauptstudiums

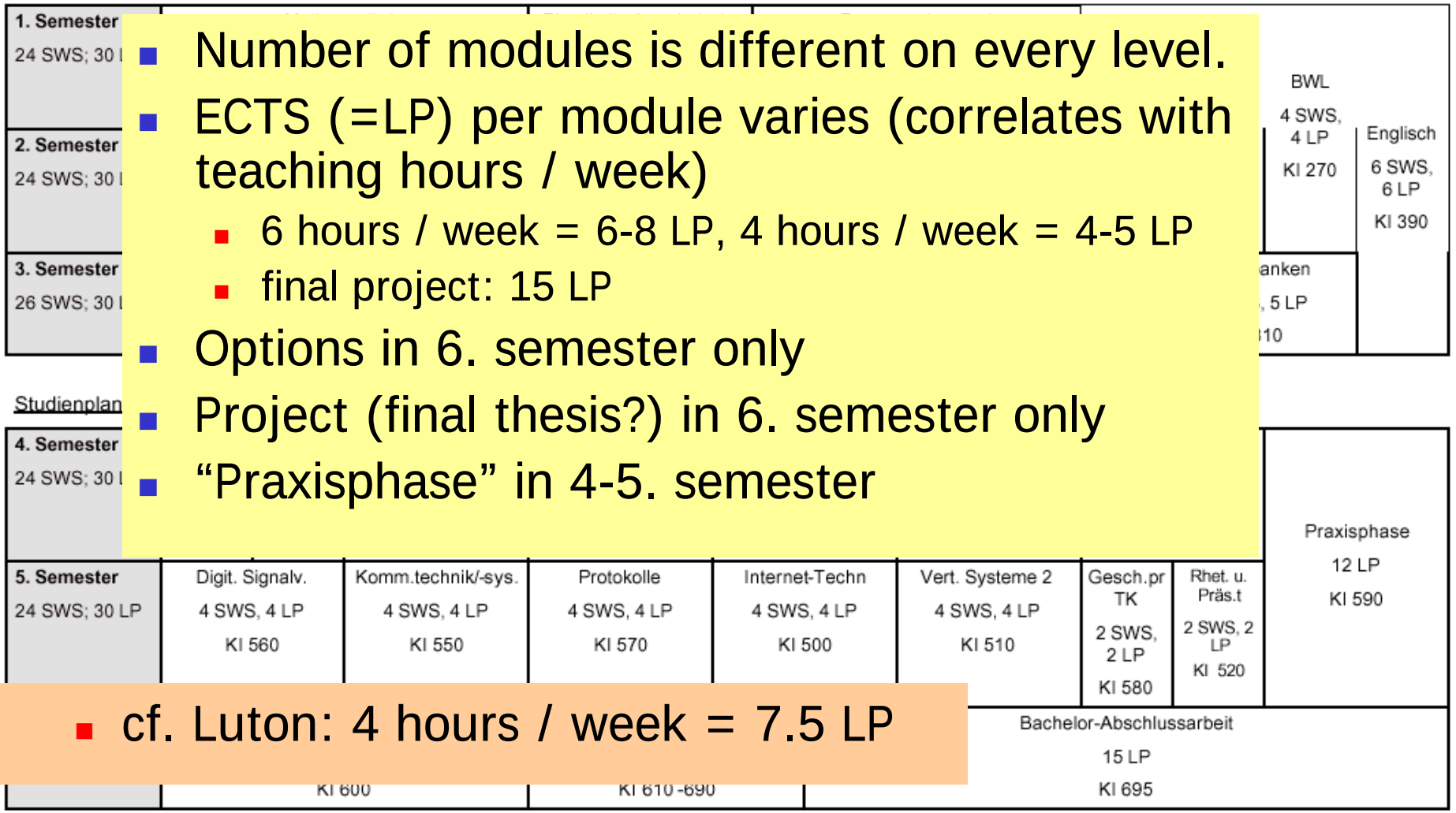
4. Semester 24 SWS; 30 LP	Mikroproz. syst. 2 SWS, 2 LP KI 460	Rechnerarchitektur 2 SWS, 2 LP KI 440	Komm.technik/-sys. 4 SWS, 4 LP KI 450	Systemman. u. Sicherheit 4 SWS, 4 LP KI 430	Softwaretech. 2 4 SWS, 4 LP KI 400	Vert. Systeme 1 4 SWS, 4 LP KI 410	Betriebssysteme 4 SWS, 4 LP KI 420		Praxisphase 12 LP KI 590
5. Semester 24 SWS; 30 LP	Digit. Signalv. 4 SWS, 4 LP KI 560		Komm.technik/-sys. 4 SWS, 4 LP KI 550	Protokolle 4 SWS, 4 LP KI 570	Internet-Techn 4 SWS, 4 LP KI 500	Vert. Systeme 2 4 SWS, 4 LP KI 510	Gesch.pr TK 2 SWS, 2 LP KI 580	Rhet. u. Präs.t 2 SWS, 2 LP KI 520	
6. Semester 14 SWS; 30 LP	Praktikum Kommunikationsinformatik 8 SWS, 9 LP KI 600			Wahlpflichtfächer 6 SWS, 6 LP KI 610 -690		Bachelor-Abschlussarbeit 15 LP KI 695			

Example: BSc Kommunikationsinformatik at HTW Saarland

3 **Module des Bachelor-Studiums**

Studienplan des Grundstudiums

- Number of modules is different on every level.
- ECTS (=LP) per module varies (correlates with teaching hours / week)
  - 6 hours / week = 6-8 LP, 4 hours / week = 4-5 LP
  - final project: 15 LP
- Options in 6. semester only
- Project (final thesis?) in 6. semester only
- “Praxisphase” in 4-5. semester

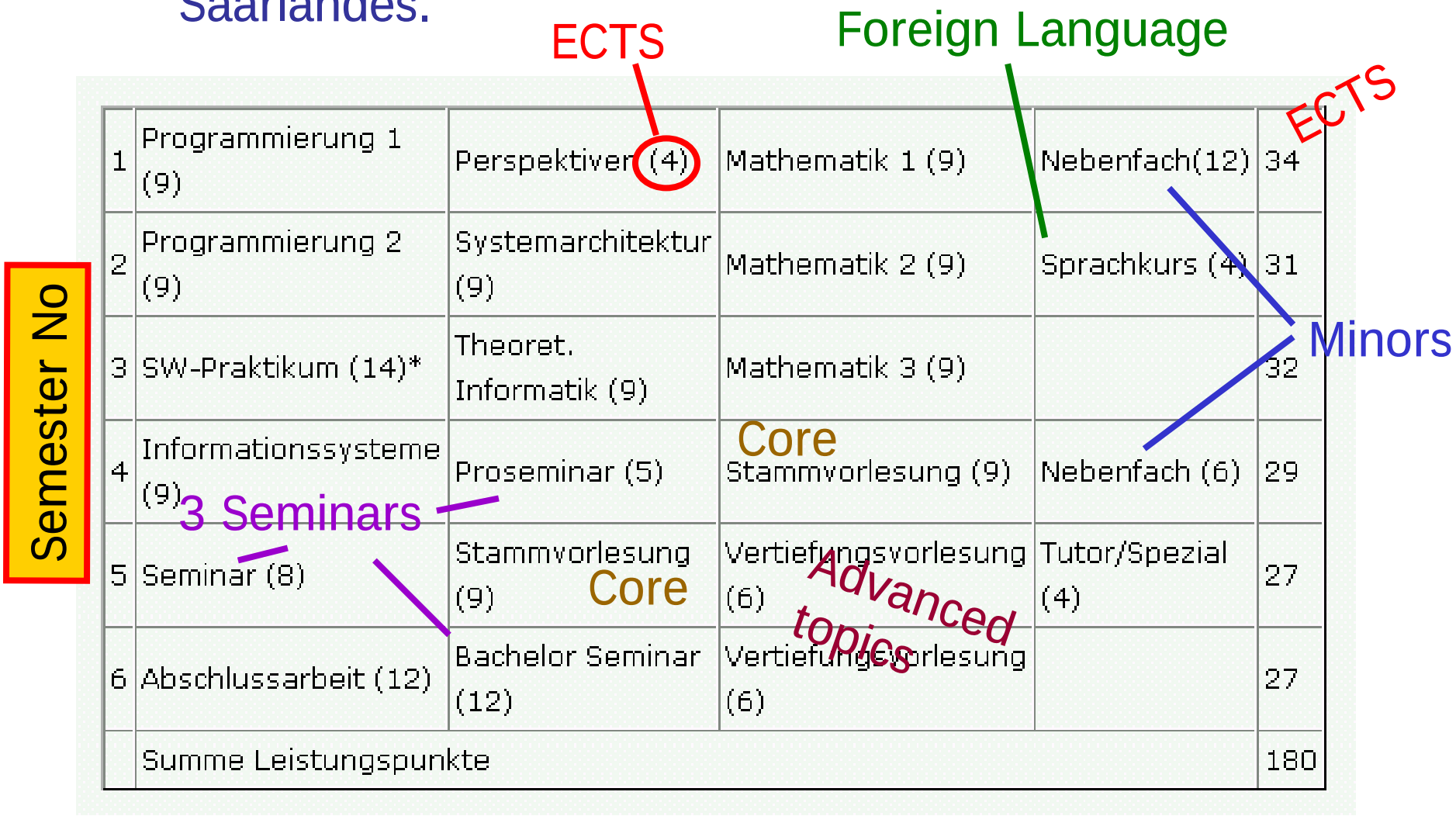


- cf. Luton: 4 hours / week = 7.5 LP

Example: BSc Informatik at the Universität des Saarlandes.

1	Programmierung 1 (9)	Perspektiven (4)	Mathematik 1 (9)	Nebenfach(12)	34
2	Programmierung 2 (9)	Systemarchitektur (9)	Mathematik 2 (9)	Sprachkurs (4)	31
3	SW-Praktikum (14)*	Theoret. Informatik (9)	Mathematik 3 (9)		32
4	Informationssysteme (9)	Proseminar (5)	Stammvorlesung (9)	Nebenfach (6)	29
5	Seminar (8)	Stammvorlesung (9)	Vertiefungsvorlesung (6)	Tutor/Spezial (4)	27
6	Abschlussarbeit (12)	Bachelor Seminar (12)	Vertiefungsvorlesung (6)		27
	Summe Leistungspunkte				180

Example BSc Informatik at the Universität des Saarlandes.



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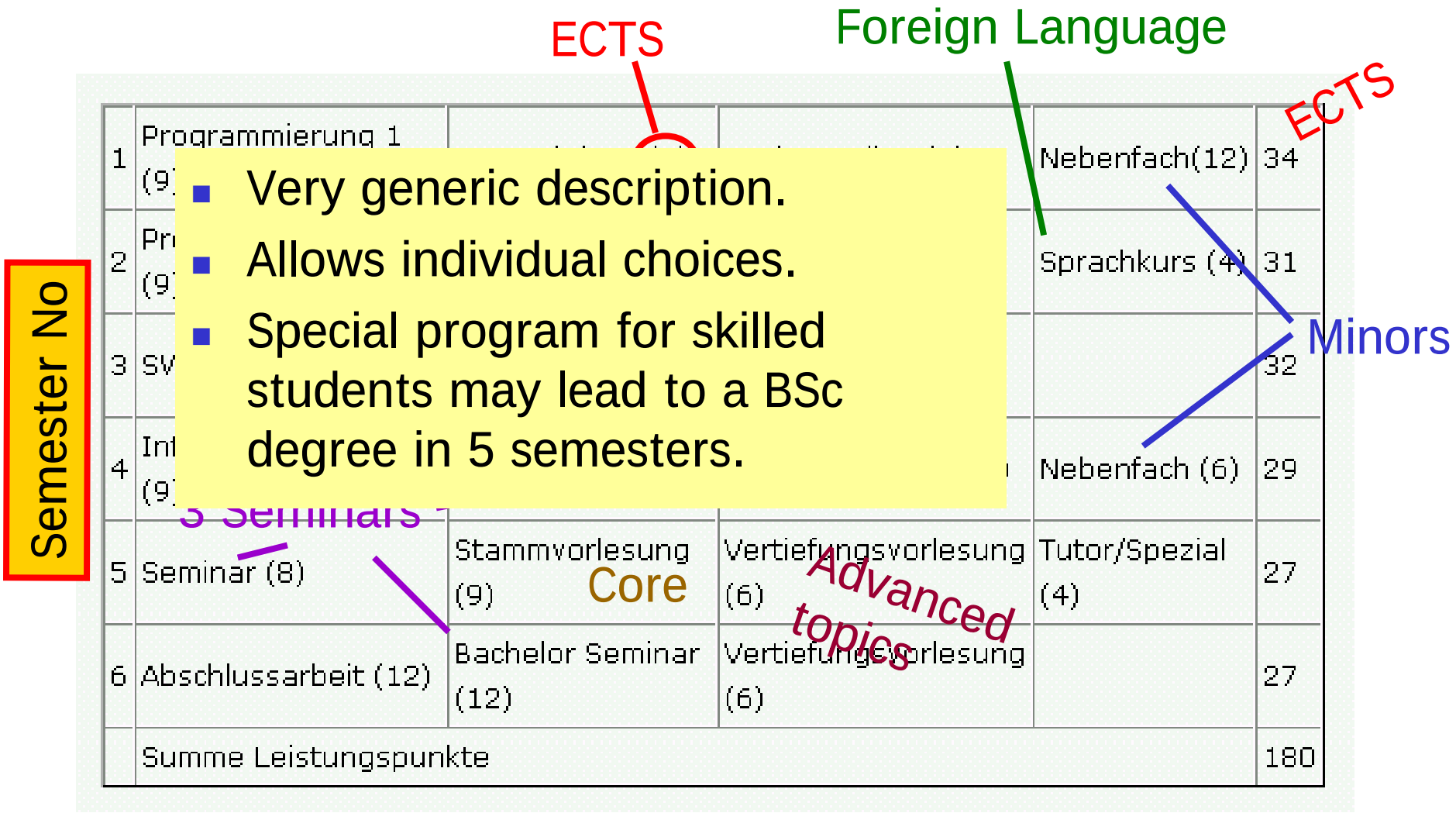
	Summe Leistungspunkte				180

Example BSc Informatik at the Universität des Saarlandes.



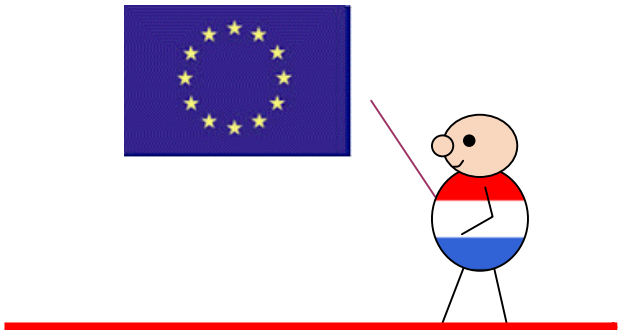
- Very generic description.
- Allows individual choices.
- Special program for skilled students may lead to a BSc degree in 5 semesters.

1	Programmierung 1 (9)			Nebenfach(12)	34
2	Pr (9)			Sprachkurs (4)	31
3	SV				32
4	Int (9)			Nebenfach (6)	29
5	Seminar (8)	Stammvorlesung (9)	Vertiefungsvorlesung (6)	Tutor/Spezial (4)	27
6	Abschlussarbeit (12)	Bachelor Seminar (12)	Vertiefungsvorlesung (6)		27
	Summe Leistungspunkte				180

20 Summary: Modularization

- Although there exists some kind of a “standard” (e.g. number of ECTS to get degree), the implementation varies heavily in detail.
- For instance, Programming in first year:
  - Luton: 15 ECTS
  - HTW Saarbrücken 16 ECTS
  - Universität des Saarlandes: 18 ECTS
- Various methods of delivery.
  - E.g. Learning a foreign language gives ECTS in German BSc programmes.

Overview



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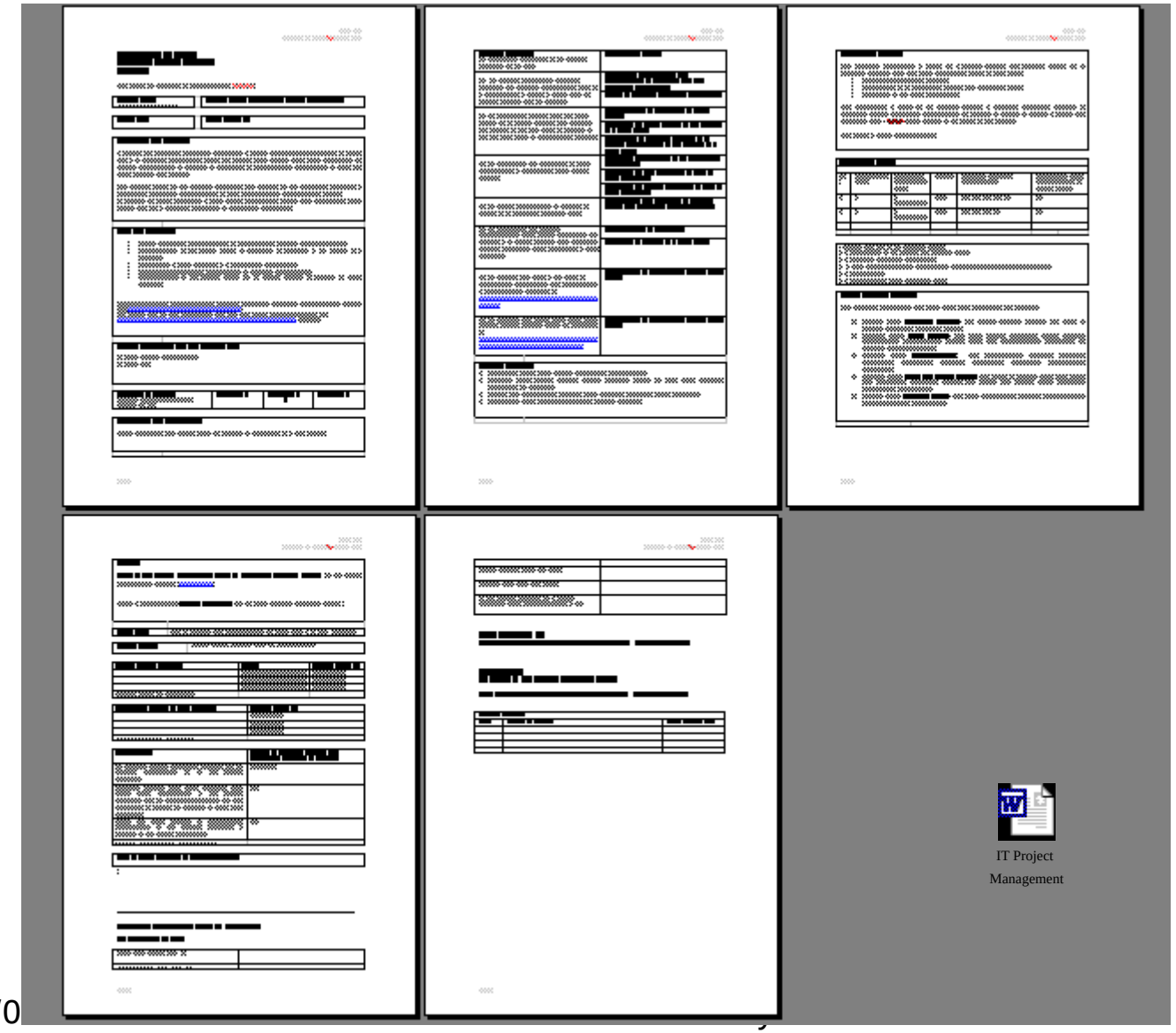
What is a module?

- Examples of module descriptions
  - Luton
  - HTW Saarland
  - Universität des Saarlandes

Luton, ModINF
Professional Project Management (MSc)



Lehrveranstaltung Projektmanagement

Modul:	Projektmanagement
ID:	KI840
Dozent:	H. Dipl.-Ing. Michael Sauer
Kontakt:	Kontaktseite
Semester:	8
Lehrform:	Vorlesung, Planspiele
Sprache:	Deutsch
Nachweis:	Projekt, mündliche Prüfung
ECTS:	2
SWS:	2
Grundlagen:	Bachelorabschluss KI oder gleichwertig
Voraussetzung für Modul(e):	-
Studienziel:	Die Vorlesung vermittelt die besonderen Herausforderungen bei der Planung, Steuerung und dem Controlling von Projekten. Wesentlicher Gesichtspunkt ist die Erläuterung der bewährten Methoden und Instrumente des Projektmanagements insbesondere bei Softwareprojekten. Die Studierenden werden in die Lage versetzt, Projekte eigenständig abzuwickeln und Projektleitungsfunktion zu übernehmen.
Inhalt:	1. Zunehmende Bedeutung von Projekten in der Wirtschaft (im Gegensatz zu Routineabläufen) 2. Projektdefinition 3. Ablauf von Projekten - Projektphasen 4. Planung, Steuerung und Controlling von Projekten 5. Qualitätssicherung im Projektablauf 6. Multiprojektmanagement 7. Instrumente des Projektmanagements 8. Besonderheiten von Softwareprojekten
Material:	Keine
Literatur:	BURGHARDT M., Projektmanagement, Publics MCD Verlag, 2000 WESTERMANN R.: Projektmanagement mit System. Gabler Verlag 2001 HIRZEL M., Multiprojektmanagement. FAZ-Verlag 2002

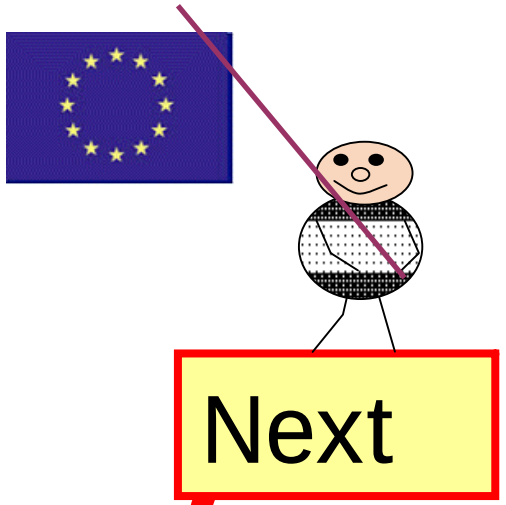
Artificial Intelligence at the Universität des Saarlandes

Artificial Intelligence	
Leistungspunkte:	9
DozentIn	
Siekmann, Jörg (Prof. Dr. (Ph.D.) grad. Ing. (Informatik))	
Autexier, Serge (Dr.)	
Benzmüller, Christoph (Dr.)	
Fiedler, Armin (Dr.-Ing. Dipl.-Inform.)	
Termine	
Montag, 14:00-16:00, Raum: HS 002, Geb.: 45	
Mittwoch, 14:00-16:00, Raum: HS 002, Geb.: 45	
Übung	
Termin: 2-stündig nach Vereinbarung	
Sprache:	English
Webseite:	
http://www.ags.uni-sb.de/~omega/teach/KI05/index.php	

26 Summary: Modules Documentation

- Very formal documentation in Luton.
- Overview and informal character in the Saarland (Germany).
- No standard in sight – necessary?
- How can we compare (e.g. for international programmes) the contents of modules when there is no standardized content description?

Overview



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MSc examples: Luton, MSc Computer Science

- Blocks allow both February and September entry.

Block A	Ma		Credits
	1	Online Database Applications	15
	2	Internet Programming	15
	3	Intelligent Agents	15
	4	Multimedia Applications	15
			60
Block B	Mb		
	1	Network Systems	15
	2	Distributed and Parallel Computing	15
	3	Web Server Architecture	15
	4	Internet Usability	15
			60
Block C	Mc		
	1	Dissertation	60
			180

180 credits = 1 MSc, hence 3 credits = 2 ECTS on MSc level?

Example: Master at the Universität des Saarlandes

- Very generic, lots of choices.

7	Stamm/Vertiefung (9)	Stamm/Vertiefung (9)	Seminar (8)	Tutor/Sprache(4)	30
8	Stamm/Vertiefung (9)	Stamm/Vertiefung (9)	Vertiefung (6)	Vertiefung (6)	30
9	Master-Seminar (12)	Vertiefung (6)	Seminar (8)	Spezial (4)	30
10	Abschlussarbeit (30)				30
	Summe Leistungspunkte				120

Core/Advanced

Advanced level

Advanced level

Dissertation

- 120 ECTS = 1 Master
- Can also be done in 3 semesters

From: http://frweb.cs.uni-sb.de/02.Neuhi an/
27/05/2005 5:59 PM

2 Studienplan des Master-Studiums

HTW Saarbrücken, Master

Module	Semester 1		2		3		4		Gesamt	
	SWS	LP	SWS	LP	SWS	LP	SWS	LP	SWS	LP
Grundlagen Basics										
Höhere Mathematik 1 und 2	2	3	2	3					4	6
Telekommunikation Telecommunication										
Protokolle in öffentlichen und privaten Netzen	4	5							4	5
Netzwerkarchitekturen			4	5					4	5
Formale Methoden der Telekommunikation	4	5							4	5
Informatik Computer Science										
Theoretische Informatik	4	5							4	5
Software-Entwicklung für Kommunikationsnetze			4	6					4	6
Architekturen verteilter Anwendungen					4	5			4	5
Sicherheit und Kryptographie	4	5							4	5
Projekt- und Führungskompetenzen Project Management										
IT-/TK-Recht für Führungskräfte			2	2					4	4
Personal- und Unternehmensführung			2	2					2	2
Projektmanagement			2	2					2	2
Business Cases der Telekommunikation			2	2					2	2
Summe Pflichtfächer	**18**	**23**	**18**	**22**	**4**	**5**	**0**	**0**	**40**	**50**
Wahlpflichtmodule Options										
Wahlpflichtmodule (*)	6	7	6	8	4	5			16	20
Praxisphasen/Master-Abschlussarbeit Practical Experience/Project										
Projektstudium oder Industriepraktikum						20				20
Master-Abschlussarbeit								30		30
Summe SWS / Leistungspunkte	**24**	**30**	**24**	**30**	**8**	**30**	**0**	**30**	**56**	**120**

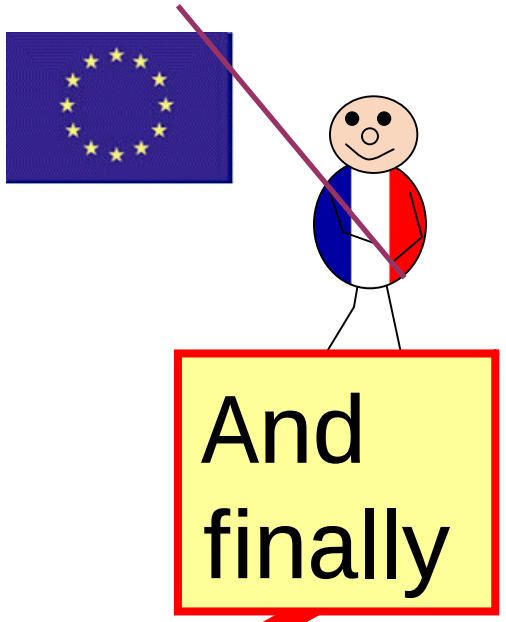
(*) SWS geschätzt

31 Summary MSc degrees

- Duration of study varies
  - Luton: 16 months
  - HTW Saarland: 24 months
  - Universität des Saarlandes: 18-24 months
- ECTS / module
  - Luton 10 ECTS / module
  - HTW 2-6 ECTS / module
  - Uni Saarland: 4-12 ECTS / module
- ECTS for project:
  - Luton: 40 ECTS
  - HTW/Uni Saar: 30 ECTS

- More inconsistency than on BSc level.
- MSc = Master?

Overview



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33 Joint international Programms (two universities: Germany and UK) is this possible/feasible?

- The good news is:
  - Modularisation helps!
  - Should be possible at least in principle.
- But, problems in detail:
  - Different ways of accreditation.
  - Different view of ECTS value per module.
  - Different view on contents and documentation.

10 Steps towards an international BSc Degree

1. Initiation of the process

- Development of suitable team structures between partner universities
- Identify appropriate roles
- Means of Communication
- Subgroups with well defined scope and responsibilities (e.g. role of Mathematics in Computer Science curriculum)

10 Steps towards an international BSc Degree

2. Networking with external parties

- For example, quality assurance and other departments of HE, quasi-governmental organisations (e.g. HRK), employer panels.
- Problems may arise from contradictory demands from these external stakeholders, e.g. Employers vs. Academics.

10 Steps towards an international BSc Degree

3. Identification of the framework and constraints

- The result of the previous process will lead to a well defined framework.
- Then:
  - Identify high level deadlines (e.g. dictated by meeting dates of governmental or university bodies).
  - Can be problematic as national processes are highly different.

10 Steps towards an international BSc Degree

4. Identifying the professional profile of the program

- Starting point will be the existing (local) programs of study.
- Mix of academically-focused and employment-oriented modules
- Possible conflicting ideas of national organizations, e.g. BCS (British Computer Society) and GI (Gesellschaft für Informatik)

10 Steps towards an international BSc Degree

5. Elaboration of the Curriculum

5.1 Method of Delivery

- What are the requirements to make a study “international”? Possible models:
  - Require change of place of study, e.g. 1st year UK, 2nd & 3rd year Germany.
  - Require change of place of study for one semester only (as in ERASMUS/Sokrates).
  - Modules are offered remotely.
  - Remote supervision of final thesis.

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10 Steps towards an international BSc Degree

5. Elaboration of the Curriculum

5.2 Problems and Solutions on module level

- Same module carries a different number of ECTS at different institutions.
  - *Solution: Identify reasons and correct.*
- Modules with the same name have different contents
  - *Solution: Revalidation or renaming.*
- Modules have a different way of assessment
  - *Solution: Clarify if this is a problem in view of learning targets, possible change of assessment strategy.*
- Modules have differing vocational expressions or contexts (e.g. Java/C++/C# delivery of OO module).
  - *Solution: Identify if this is a problem in view of learning targets, possible change of delivery.*

10 Steps towards an international BSc Degree

6. Integration of the proposed program within the institutional context(s).

- Is change of program allowed during the course of studies?
- Part-time options, February entry?
- Synergies (e.g. use of existing modules)?
- Joint Programs (Major/Minor)?
- Alternative degrees or certificate for students not finishing the proposed program of study?

10 Steps towards an international BSc Degree

7. Appropriate Documentation and Examination Regulations

- For instance in Germany there are well defined documents *Studienordnung* and *Prüfungsordnung.*
- The documentation in UK is in form of a *Programme Handbook* and QA documents.

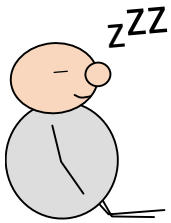
10 Steps towards an international BSc Degree

Steps 8-10

- 8. Accreditation and validation.
- 9. Advertising the new course.
- 10. Training, Monitoring and Evaluation

43 Conclusions

- Is international collaboration (e.g. joint degrees) possible?
  - There are still a number of obstacles:
    - ECTS/module, frameworks and stakeholders, context in which universities work, etc.
  - However based on the Bologna process these problems can be identified and eventually be solved.
- The (academic/vocational) quality of a (BSc/MSc) degree can only be evaluated in the context of the university where this degree is obtained.



Exercise

- Student A comes from Luton with 120 ECTS and wants to study their final year (BSc) in Montpellier II.
- Student B comes from the Saarland with 120 ECTS and wants to study their final year (BSc) in Montpellier II.
- Questions:
  - What do you tell student A?
  - What do you tell student B?