MODULE & LEARNING OUTCOMES

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European Credit Transfer System (ECTS) - Objectives

- to facilitate transfer of students between (European) countries
- to enhance the quality of student mobility
- to facilitate academic recognition
- to promote key aspects of the European dimension in Higher Education
- to enhance the transparency and comparability of European systems , therefore also to promote the attractiveness of European HE towards the outside world
- to improve transparency and comparability of study programmes and qualifications
- to facilitate the mutual recognition of qualifications

The Credit Point System (1)

- 40 weeks of full-time learning
- 1 credit point = 25 to 30 hours (according to ECTS guidelines)
- No more than 1800 hours per academic year, 30 credit points per semester System must be accumulative, transferable and course-related
- European Bachelor degree = 180 – 240 ECTS= 5400 – 7200 hrs
- Indonesia:
  - Per semester: 18 sks = 18x3 hrs x16 weeks = 864 hrs
  - Bachelor (4 yrs) = 864 x 2 x 4 = 6912 hrs
  - 1 ECTS = 6912/240 = 28.8 hrs

The Credit Point System (2)

- Student-centred system
- Based on workload required to achieve learning outcomes
- States the average anticipated student workload
- Individual capacity can vary
- “Convention” that 60 credits is notional annual workload of full-time student
- Allocated to all aspects of study programme
- Based on completion

Credits & Workload

- **Credit**
- Mirrors the student workload necessary to achieve the competence defined as learning outcomes
- It only reflects what the student has achieved
- It does not state how the student performed (grade)

- **Workload**
- Anticipated and later on evaluated time being foreseen for studying a learning area to achieve the competences defined as learning outcomes
- Comprises all the time a student has to spend to achieve the respective learning outcomes i.e contact hours (lectures), working in the library, in the laboratory, at home,…

The Credit Point System – …as the educational currency

- Similar to a currency ECTS credits
  - are generally accepted
  - document transparency
  - can be used as a unit of account
  - can be saved
  - can be easily transferred
  - can be acquired

Module

Definition

- *"A module is a self-contained, formally structured learning experience with a coherent and explicit set of learning outcomes and assessment criteria."*

It Requires

- Definition of learning outcomes
- Allocated credits

It Facilitates

- Modularisation
- Design of individual study-programmes
- Different routes to identifiable degrees, certificates etc.

Modularization

- Bachelor’s or Master’s degree programs must be modularized and work with a credit point system
- Modularization involves dividing the course content into discrete units on the basis of topic and the time required
- Each module should be designed for one semester or a maximum of one year
- As a principle, modules must culminate in examinations.

From Profile to Programme

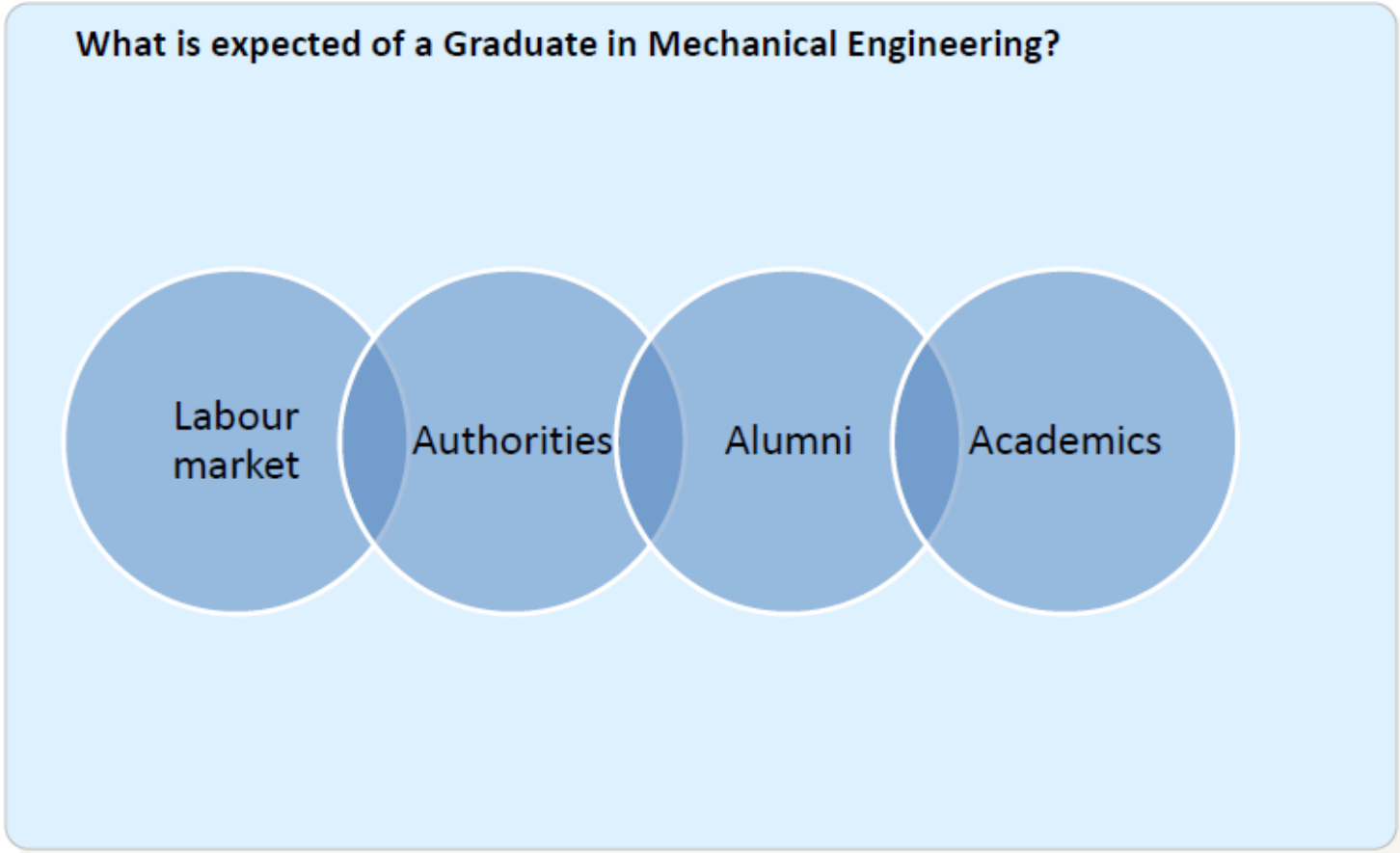
Step 1
- Definition of academic & professional profiles

Step 2
- Translation of academic & professional profiles into **learning outcomes on programme level**

Step 3
- Programme structuring and module composition

Adapted from: Annette Grewe, HS Fulda

From Profile to Programme Step 1 - Example



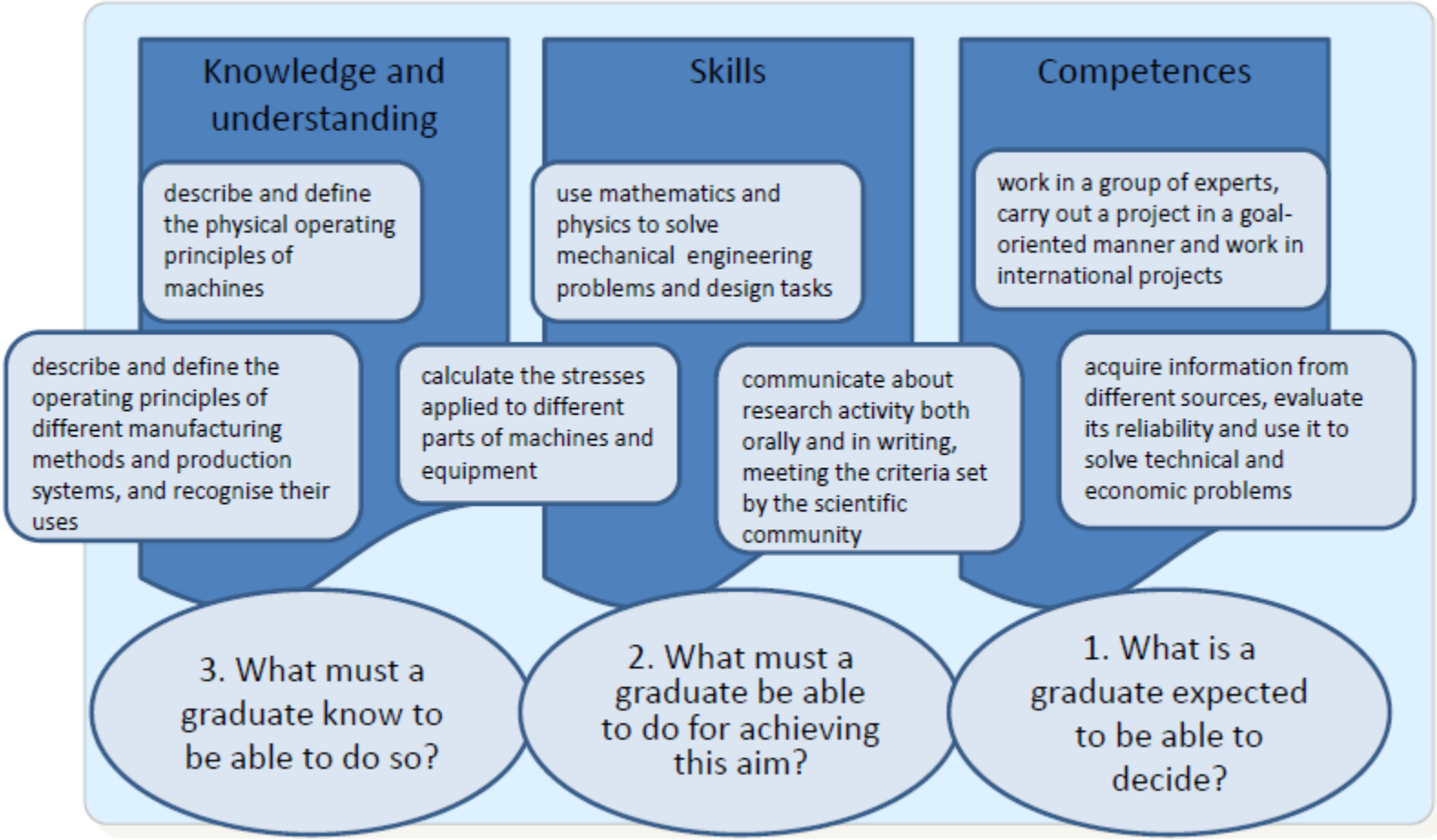
Adapted from: Annette Grewe, HS Fulda

From Profile to Programme
Step 1 - Example

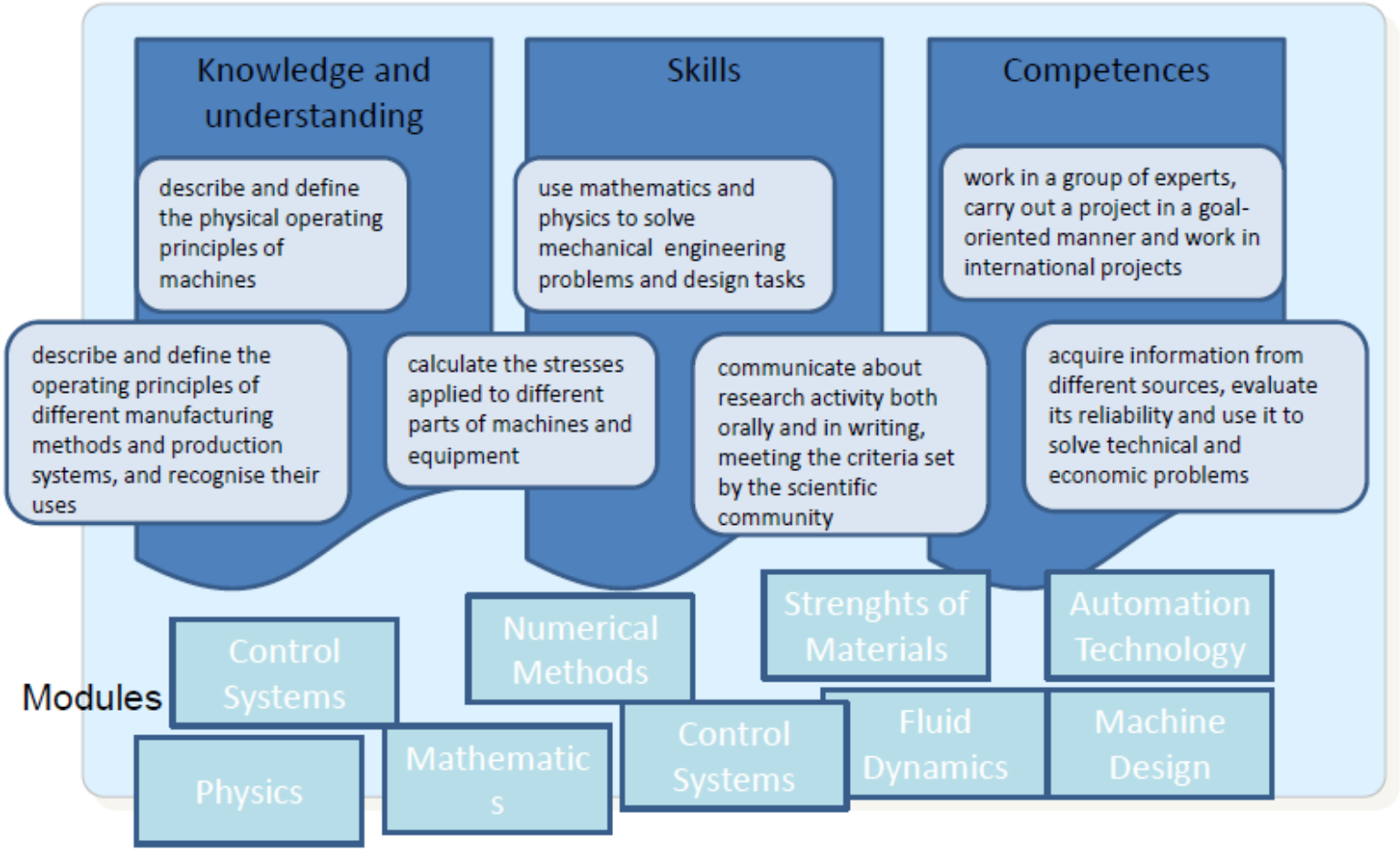
Professional objectives					
Implement practical professional tasks in their field and how to use theoretical knowledge to solve practical mechanical problems that require creativity	Handle physical operation of machines and how to control them, and about the stress applied to different parts of machines and equipment and how resistant the structural materials are	Use the most recent production systems and manufacturing methods and their effective implementation	Search for information from different sources and apply it to create improved technical and economic solutions	Follow the international development of the mechanical engineering field and its infrastructure and use the latest and most reliable information to solve problems in the field	Work as a supervisor and manage and develop goal-oriented activity in the work place

Adap

From Profile to Programme
Step 2- Example



From Profile to Programme
Step 3- Example



Core content analysis to the contents of course or degree programme

What should the student know?	**1. Must know** knowledge and skills that are absolutely necessary in order to learn new knowledge and skills. Not usually composed of individual facts, but rather theories, models and general principles.	**2. Should know** details and extensions to core content theories, models and principles. Contains knowledge and skills that may prove useful in some situations	**3. Nice to know** supplements the core content and should know with details. Rarely useful in learning the basics of some subject area. Acquiring it is largely up to the student
Scientific competence(What does the student know in theory?)			
Professional competence and skills (What does the student know in practice?)			

Adapted from LUT Teacher's Quality Manual

The Module Handbook – Part I

Module name:	
Module level:	*Bachelor or Master*
Abbreviation, if applicable	
Sub-heading, if applicable	
Courses included in the module, if applicable:	
Semester/term:	
Module coordinator(s):	*Name of an individual*
Lecturer(s):	
Language:	
Classification within the Curriculum	*For all degree programmes in which the module is taught (including those being discontinued), indicate the degree programme, area of specialisation (where applicable), compulsory/optional, semester*
Teaching format / class hours per week during the semester:	*Indicate the number of class hours per week during the semester and group size, broken down by teaching format: lecture, exercise, internship, project, seminar, etc.*

The Module Handbook – Part II

Workload:	*Estimated workload divided into face-to-face teaching/contact hours and independent study*
Credit points:	
Requirements:	*Prior knowledge or preliminary modules*
Learning goals / competencies:	*Key question: Which qualification should the students attain?* *e.g.:* - *Knowledge: theoretical and factual* - *Skills: cognitive and practical, where theoretical knowledge can be applied* - *Competences: integration of knowledge, skill and social competencies in the actual working environment* *"Students know/ are able to/ are capable of…."*
Content:	*The description should specify the weighting and the level of the content.*
Study/exam achievements:	
Forms of media:	
Literature:	

Correlation between the ASIIN Subject Specific Criteria (SSC) for Physics and the Program Learning Outcomes

ASIIN Subject Specific Criteria for Physics (ASIIN -SSC)		Program Learning Outcomes (PLO)									
		1	2	3	4	5	6	7	8	9	10
1	They have sound knowledge of classical physics (mechanics, electrodynamics, thermo-dynamics, vibrations, waves and optics) and are familiar with the fundamentals of quantum, atomic and molecular, nuclear, elementary particle and solid state physics.	x									
2	They are familiar with important mathematical methods used in physics and can use these to solve physics problems.		x								
3	They have an extensive understanding of the fundamental principles of physics, their inherent relation and mathematical formulation and, based on this, have acquired methods suitable for theoretical analysis, modelling and simulation of relevant processes.			x							
4	They have applied their knowledge to physics problems in an exemplary manner and studied some areas in greater depth, thereby acquiring a first basis for problem solving competence.			x							

Mapping of the courses that support the program learning outcomes (PLO)

No	Code	Course Name	CU	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PL10
2	FI1101	Elementary Physics IA	4 (1)	X	X	X	X	X					
3	KI1101	Basic Chemistry IA	3								X		
4	KU1011	Indonesian Language	2						X				
7	KU1101	Sports	2									X	
9	MA1201	Mathematics IIA	4	X									
10	FI1201	Elementary Physics IIA	4 (1)	X	X	X	X	X					
11	KI1201	Basic Chemistry IIA	3								X		
12	KU102x	English	2						X				
14	FI2101	Mathematical Physics I	4	X	X	X	X						
15	FI2102	Mechanics	4	X	X	X	X						
16	FI2103	Electronics	4	X				X					
17	FI2201	Mathematical Physics II	4	X	X								
18	FI2202	Electricity and Magnetism	4		X	X							
19	FI2203	Modern Physics	3	X									
20	FI2204	Measurement Methods and Data Processing	3(1)					X					

Courses supporting each PLO

No.	Programme Learning Outcome	Supporting Courses
1	They are able to demonstrate their knowledge of classical and modern physics by identifying physical properties of a physical system	**Core Physics**: FI1101, FI1201, FI2102, FI2202, FI2203, FI3101, FI3102, FI3103, FI4101, FI4202 **Mathematical tools:** FI2101, FI2201 **Subject in simulation and computational analysis:** FI3202
2	They are able to formulate a standard physical system into a physical model by using mathematics	**Core Physics**: FI1101, FI1201, FI2102, FI2202, FI2203, FI3101, FI3102, FI3103, FI4101, FI4202 **Mathematical tools:** FI2101, FI2201 **Subject in simulation and computational analysis:** FI3202
3	They are able to solve problems of a standard physical system comprehensively by the use of mathematics and computational tools	**Core Physics**: FI1101, FI1201, FI2102, FI2202, FI2203, FI3101, FI3102, FI3103, FI4101, FI4202 **Mathematical tools:** FI2101, FI2201 **Subject in simulation and computational analysis:** FI3202