



Innovation for Excellence in Engineering Education

**The New Prototype Curriculum of IGIP for
International Engineering Educators**

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About IGIP: www.igip.org/index.php

- **The only one International Society for Engineering Pedagogy**
- **49 years tradition of contributing to Engineering Education and Pedagogy**
- **IGIP provides certification for engineering educators**
- **IGIP provides accreditation for institution that deliver courses that conform with the IGIP Prototype Curriculum**
- **18 Accredited Training Centers for Engineering Pedagogy**



Mission of IGIP

- Improving teaching methods in technical subjects
- Developing labour market oriented curricula that correspond to the needs of students and employers
- Encouraging the use of media in technical teaching
- Integrating languages and the humanities in engineering education
- Fostering management education and training for engineers
- Promoting environmental awareness
- Supporting the development of engineering education in developing countries



IGIP is accredited by UNESCO

- 1) The IGIP curriculum, which has been developed by Adolf Melezinek (University of Klagenfurt) and IGIP IMC, has been anchored since 1993 as an advanced training program for technical lecturers (teachers) and engineering educators (comp. 1). Prof. Melezinek was the IGIP President for more than 30 years.**
- 2) First Professorship for Engineering Pedagogy at Technische Universität Dresden in 1949, Prof. Lohmann, and Foundation of the first Institute for Engineering Pedagogics in 1951.**
- 3) The currently valid IGIP Prototype Curriculum, which is implemented by several accredited IGIP training centers in different countries, has been valid since 2006.**



Profile of an Engineering Educator

The qualification profile of an engineering educator is based on three pillars:

- ✓ **Engineering qualifications that are earned through a recognized and/or accredited engineering study program**
- ✓ **Professional experience as Engineer and Engineering Educator**
- ✓ **Educational qualifications in engineering pedagogy acquired in the course of a comprehensive education program**



International Engineering Educator

ING.PAED.IGIP is a register, which certifies a certain educational level for a teacher, trainer or instructor, which is given **by the IGIP Prototype Curriculum**.

Any engineering educator who passes the curriculum at any accredited training center for International Engineering Education, and whose education, training and professional experience meet the IGIP standards may apply for the certification as **"International Engineering Educator" - ING-PAED IGIP**.

The world of Higher Education is in a change process since a couple of years:

- Very fast development process in changing of management processes at Higher Education Institutions (Change Management!)
- Change of traditional curriculum and teaching and study methods
- Change of research character and its organization

In the last few years, it has been observed that many countries, however, also individual universities want to participate in the change processes

A large number of education providers are opening up countless offers to the universities.

The quality is very different!

The changes in the new prototype curriculum are characterized by the following main features:

1. Extension of the target groups of the prototype curriculum:
 - i. Engineering Educators - Staff at Higher Education Institutions
 - ii. Future Staff in Engineering Education - PhD,
 - iii. Students in Engineering and Sciences Courses at Higher Education Institutions
 - iv. Deans and Heads of Faculties, Schools or Departments
 - v. Management Staff at Higher Education Institutions
 - vi. Technical Vocational Teacher at Higher Vocational Colleges



Engineering Pedagogics - Holistic Didactic Concept

Economics

**Profession
„Engineer“
as reference field**

Production and
Services structures

Working tasks/actions
and duties of engineers

Demands on engineers

Sciences

**Engineering
Sciences
as reference field**

developments in
the engineer-
sciences
with consequences
for technology and
technics

Society

**Social
and Education Policy
specifications**

socially
certain norms
and values, Ethics
→socialization function

Legal framework

Students/Participants

**Engineering
Students as
reference field**

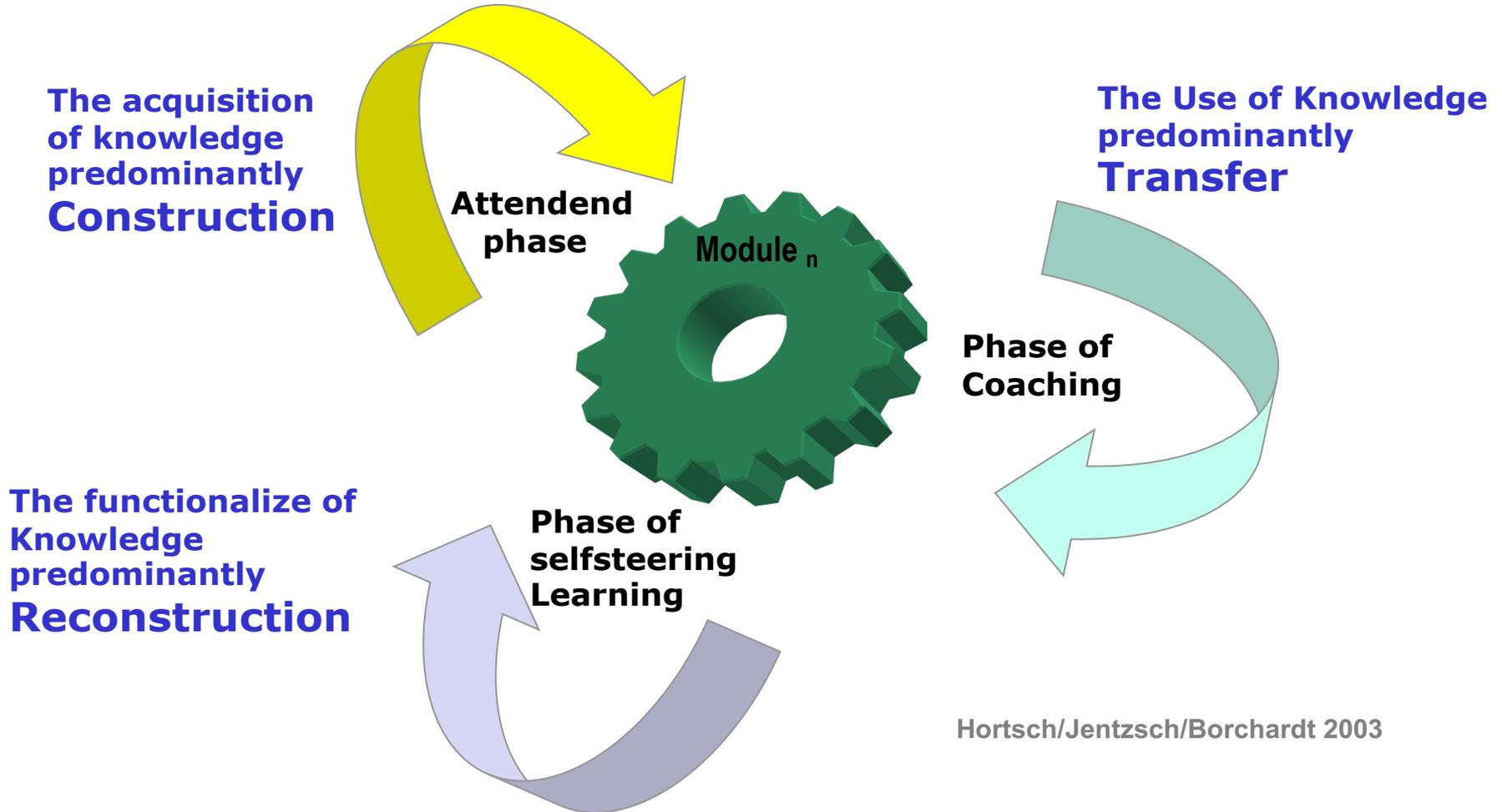
conditions,
related needs
of their own
development

Psychology

**Learning and
developmental
psychological
Findings**

(Act Theory!!!)

**Demands on Engineering Education with respect to
objectives, content, methodical and didactical design
and media**



Hortsch/Jentzsch/Borchardt 2003



Module Area I: Higher Education System and Vocational Education System	1 CP
Module Area II: Basics of Engineer Didactics and Methodics – Educational Technology (Designing of Learning and Teaching Processes – Didactics and Methodics)	4 CP
Module Area III: Design of Academic Courses	4 CP
Module Area IV: Curriculum Theory and Practice	2 CP
Module Area V: Didactical Paths from Theory to Application	3 CP
Module Area VI: Application	3 CP
Module Area VII: Selected Additional Units	3 CP

Module Area I: Higher Education System and Vocational Education System **1**

IGIP Higher Education System and Vocational
M 1 Education System

Module Area II: Basics of Engineer Didactics and Methodics – Educational Technology (Designing of Learning and Teaching Processes – Didactics and Methodics) **4**

IGIP Unit 1: Design of Teaching and Learning
M 2 Processes
Unit 2: Media in Engineer Education
Unit 3: Communication Processes
Unit 4: Control and Evaluation of Learning Outcomes in Engineering Education

	Module Area III: Design of Academic Courses	4
IGIP	Unit 1: Relation between Lecture – Seminar –	
M 3	Consultation – Self Study	
	Unit 2: Laboratory	
	Module Area IV: Curriculum Theory and Practice	2
IGIP	Unit 1: Determination of Study Goals and	
M 4	Objectives (Qualifications, Competencies)	
	Unit 2: Teaching Portfolio	
	Module Area V: Didactical Paths from Theory to	3
	Application	
IGIP	Didactical Paths from Theory to Application –	
M 5	Internships, Research Projects with Partners from	
	the Labour Market	

Module Area VI: Application 3

IGIP Unit 1: Best Cases, Best Practice

M 6 Unit 2: Final Colloquium

Module Area VII: Selected Additional Units 3

IGIP All Units are Examples!

M 7 Unit 1: Digitization of Teaching

Unit 2: Excursions to HE (Research)

Institutions and the industrial partners

Unit 3: Entrepreneurship

Unit 4: ...

IGIP M 3	Design of Academic Course Types	National Responsible Lecturer
Contents and purposes of the qualification	<p>Unit 1: Relation between Lecture – Seminar – Consultation – Self Studies</p> <p>Participants are able to plan, to carry out and to follow up academic course types in accordance with the intended qualification goals and the target groups. They are able to determine the peculiarities of the academic teaching and study forms in their context in specific cases.</p> <p>Unit 2: Laboratory</p> <p>Participants are able to design purposeful teaching and learning processes in laboratory work and internships in exercises and self-study based on scientific findings.</p>	
Forms of Teaching	Seminars	
Assessment and Evaluation	Design and Presentation of an academic engineering course type	
Credit Points	Through this module 4 credit points can be acquired.	
Amount of Work	The total work load equals 60 hours.	