DHBW
Baden-Wuerttemberg
Cooperative State University

Baden-Wuerttemberg Cooperative State University

The cooperative original



www.dhbw.de

Baden-Württemberg Cooperative
State University

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Dual By Design:

Cooperative Education

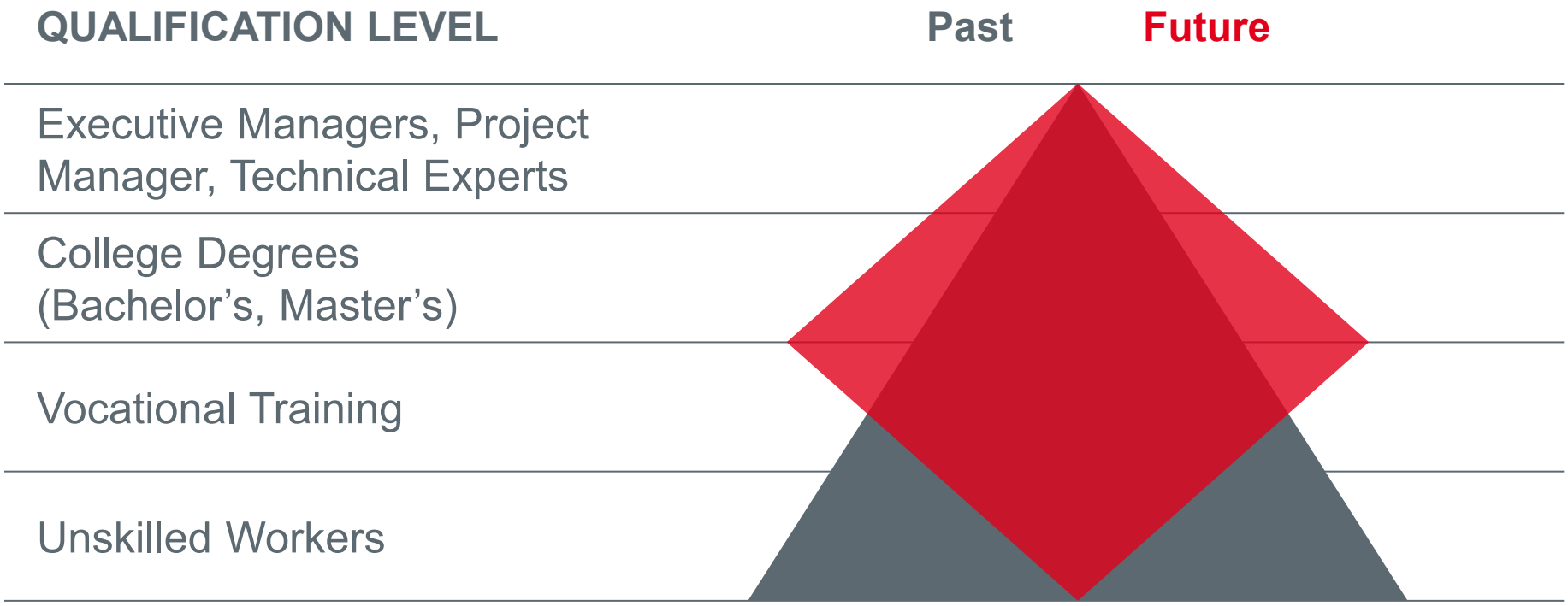
in Higher Education

Prof. em. Kay Wilding
Former Dean of Studies
Electrical Engineering
DHBW Mannheim

Renowned Corporate Partners



The Shift in Skill Requirements in the Economy



*Source: Prof. Matthias Landmesser. *Challenges of the Academic Further Education from the Corporate Perspective*. KIT, March 2013.

The successful model combining theory and practice

12 sites in Baden-Wuerttemberg

Nine DHBW locations and three campuses

34,000 students

in Baden-Wuerttemberg

10,000 lecturers and faculty members

Experts from the field

2,500 staff members

Teaching staff, professors, scientific and academic employees



The successful model combining theory and practice

At the top nationwide

Roughly 10,000 graduates every year

Large alumni network

Over 240,000 students who have successfully completed their studies

9,000 corporate partners

For a successful cooperative study model

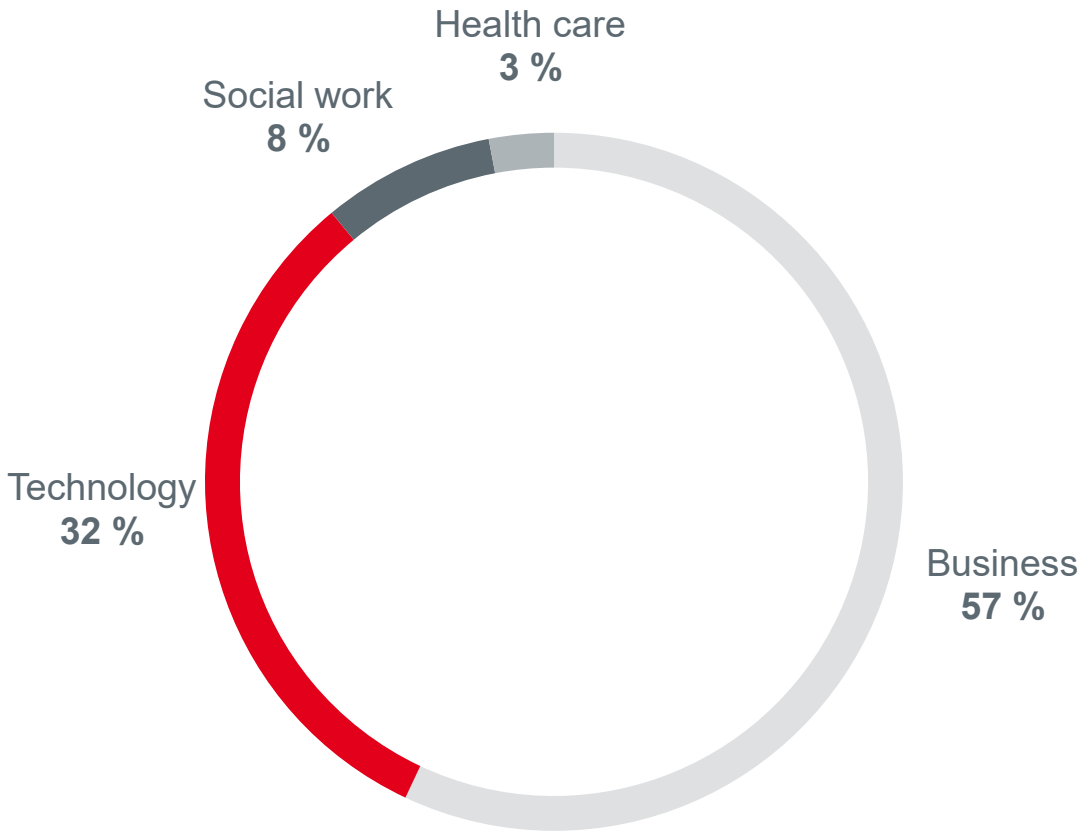
Diverse range of programmes

More than 30 bachelor's degree programmes with around 100 fields of study, as well as 26 career-integrating, continuing education master’s degrees



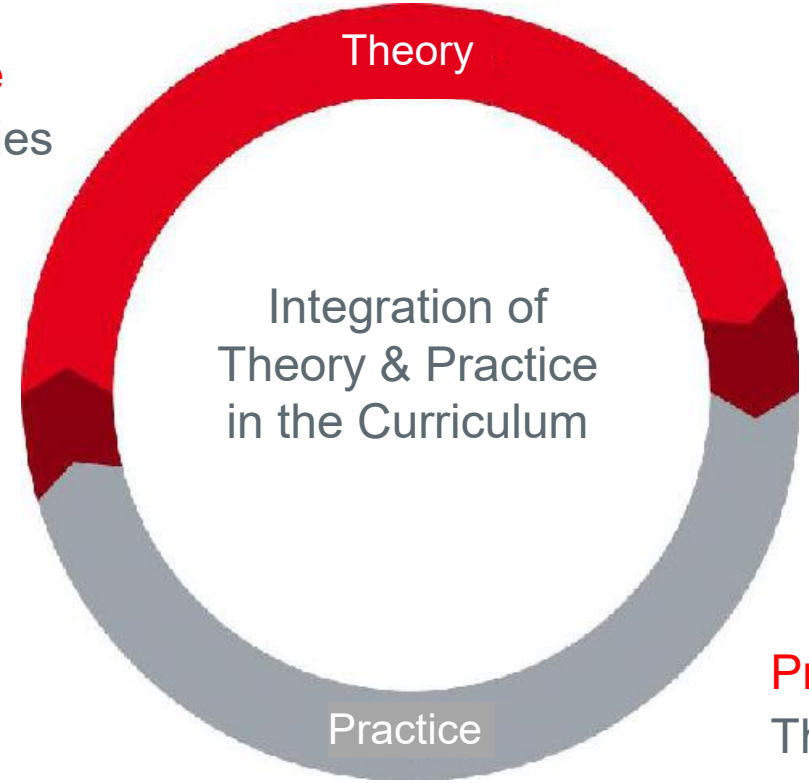
Distribution of students by study area

The DHBW offers a wide range of nationally and internationally accredited undergraduate work-study programmes in the fields of business, technology, social work and health care.



Study in a career-integrated system: theory and practice

Theoretical knowledge
Three months of studies

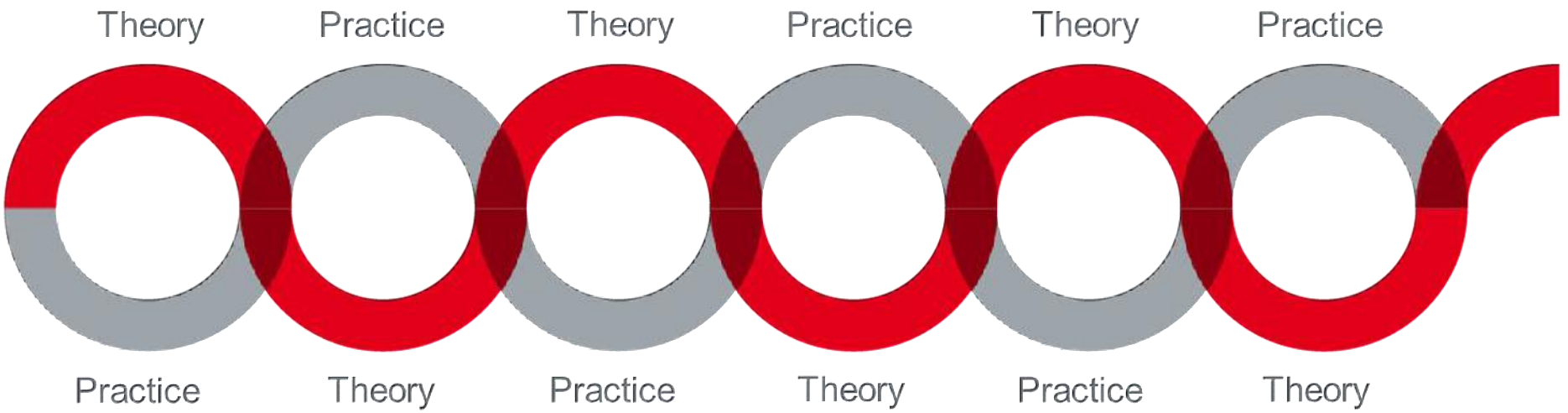


Practical experience
Three months of on-the-job training

Six complete cycles of theory & practical phases

Abitur, or university entrance qualification with aptitude test. Special admission requirements apply to applicants with professional qualifications.

Occupational selection / admission and contract with a company or a social/healthcare facility



Final degree

(B.A., B.Eng., B.Sc.)
210 ECTS credits

The course of a programme at the DHBW

1 year
Occupation



Final
degree

(MBA, M.A., M.Eng., M.Sc.)
90 ECTS credits



Advantages of the DHBW's cooperative study concept

- **Three-month rotation** between college and work in the field
- Attractive **corporate partners**: roughly 9,000 companies and social, as well as health-care adjacent, facilities
- Monthly salary for the entire duration of study
- **Relevant content in small classes** - lecturers from the professional field
- **High retention rate** after graduation



Added value for students and prospective students

- Individual support through small course groups
- Financial independence
- High employability and very high retention rates
- Early entry into professional life thanks to short duration of studies
- Lecturers from academia and the field
- Business- and socially relevant study content
- Linking of theory and practice at two learning locations

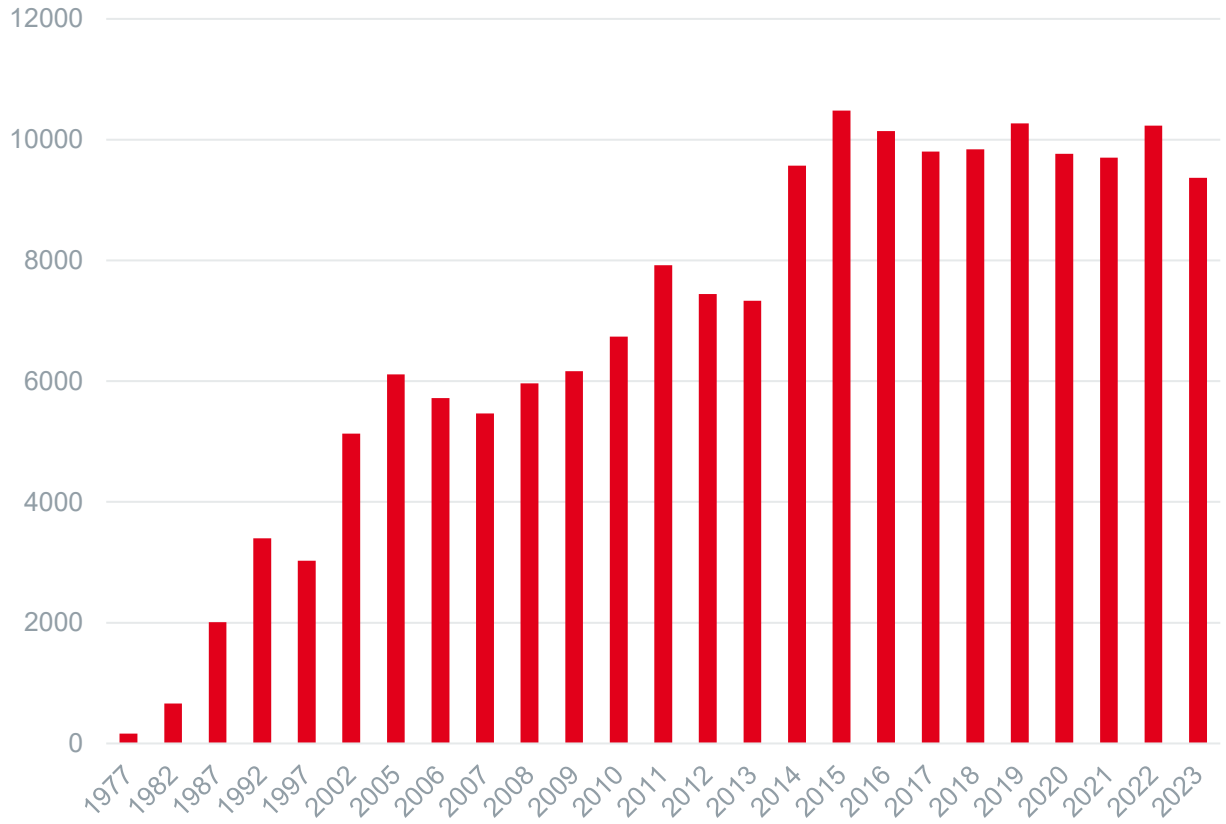


Added value for corporate partners

- Securing and retaining skilled workers
- Selection of students by corporate partners
- Hands-on studies for the next generation of managers and specialists
- Early talent development
- Socialisation of the next generation of managers and specialists in the company
- Active involvement of companies and institutions (members of the university)
- Unique qualification profile of the co-op students
- Short training period

Number of graduates per year: 1977-2023

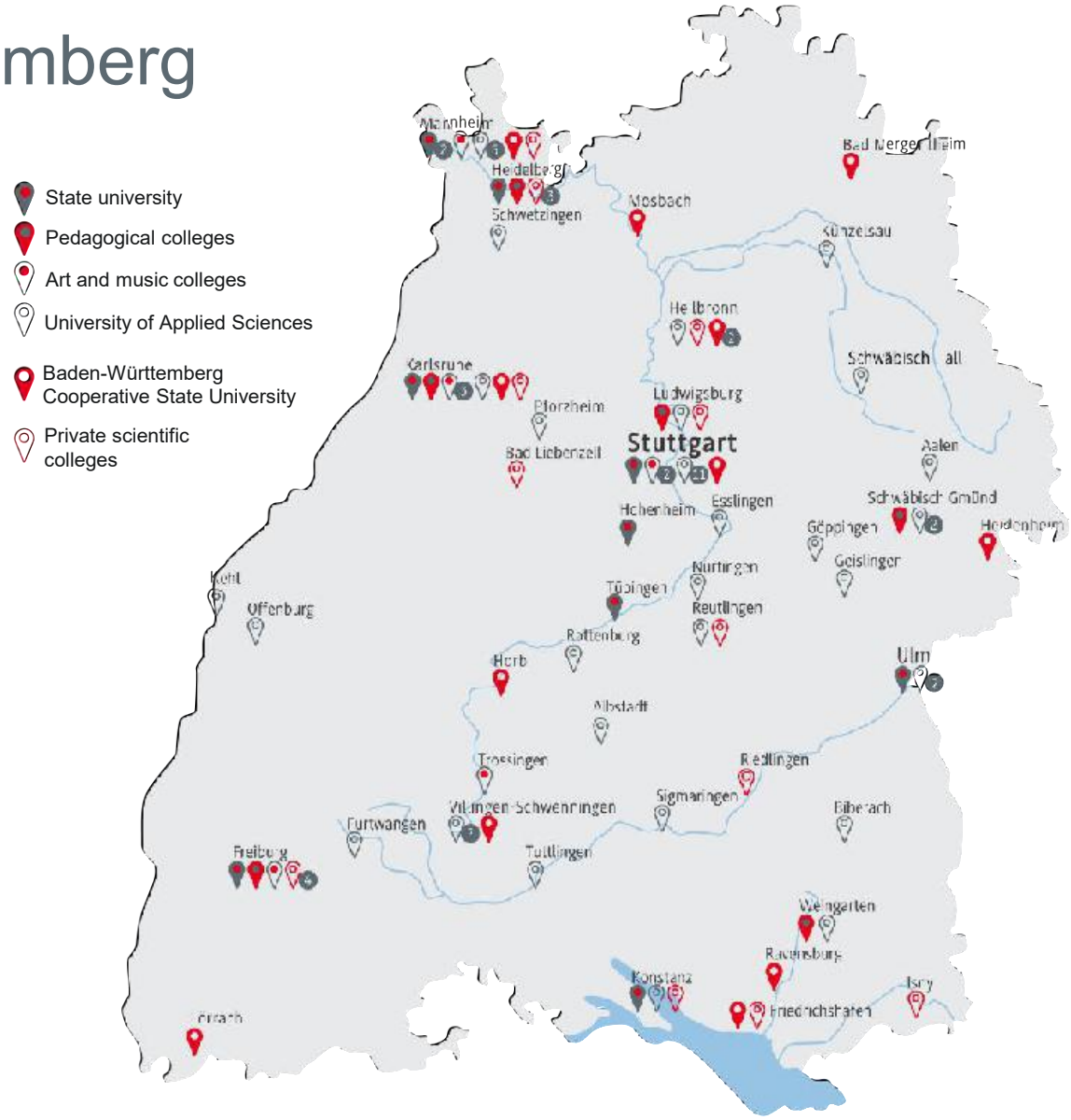
Eight out of ten DHBW graduates are offered a contract at the time of graduation. To date, over 220,000 graduates have obtained a degree from the B.A./DHBW.



*Source: DHBW, State Statistical Office of Baden-Wuerttemberg 2023

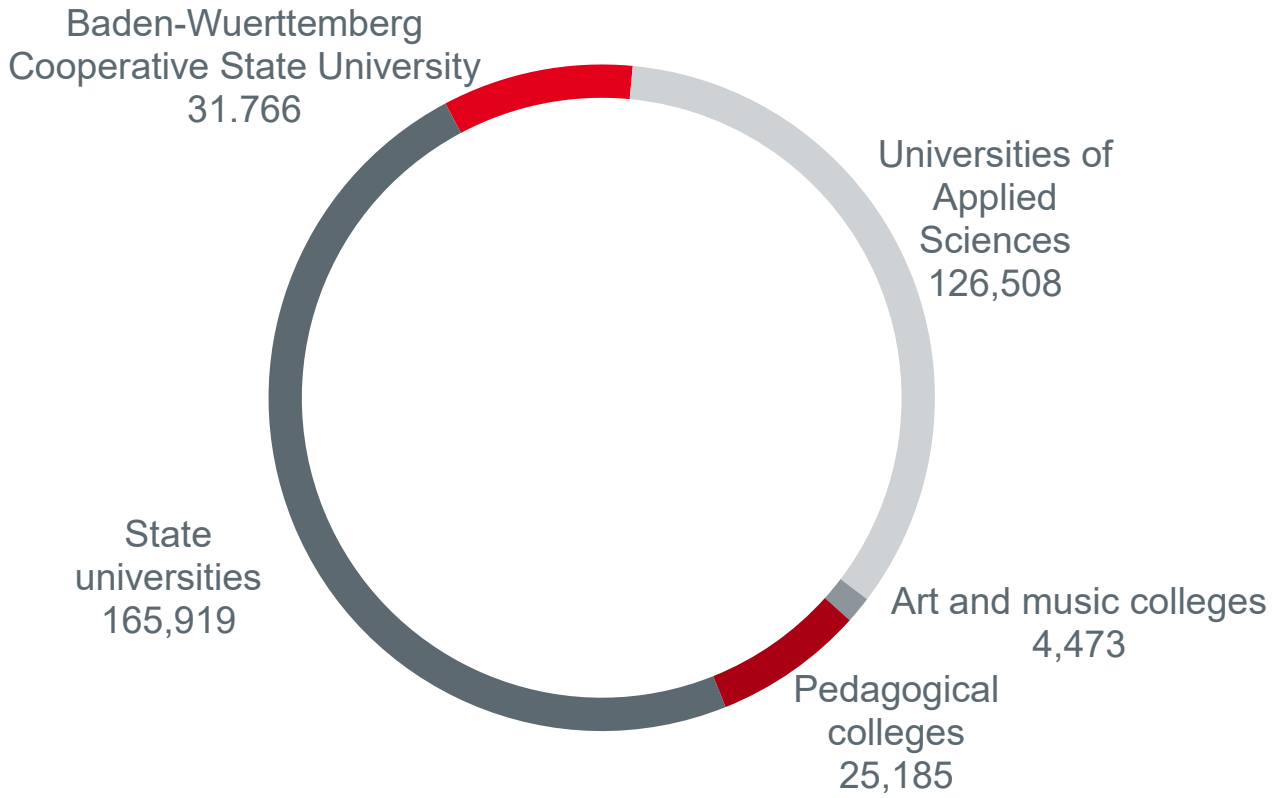
Higher education in Baden-Wuerttemberg

- 9 state universities
- 3 private scientific colleges
- 6 pedagogical colleges
- 8 art and music colleges
- 24 universities of Applied Sciences (HAW)
- **12 locations of the Baden-Wuerttemberg Cooperative State University**



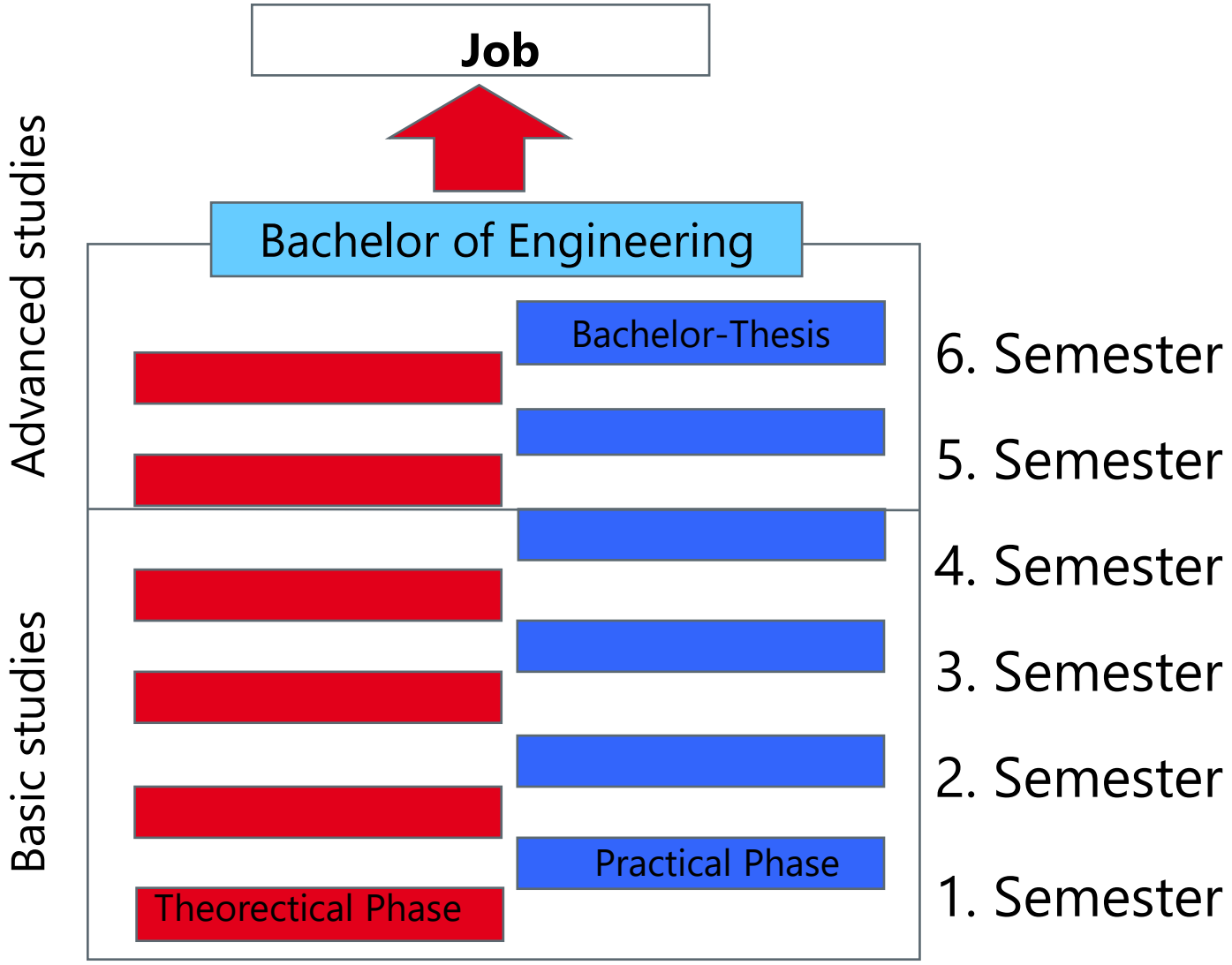
Universities and students in the 2022/2023 WS in Baden-Wuerttemberg

In the 2021/2022* winter semester, there were around 355,000 students in Baden-Wuerttemberg.



*Source: State Statistical Office of Baden-Wuerttemberg 2022

Structure of the Studies at the DHBW



European Credit Transfer System (ECTS)

1 credit = 30 h of workload for the student(Lectures, Exams, Home Work)

Standard Bachelor Program needs **180 credits**

Mostly done in 6 Semester/ 3 Years

180 credits / 3 years = 60 credits per year

60 credits * 30 hours/credit = **1800** hours per year

Standard worker in Germany:

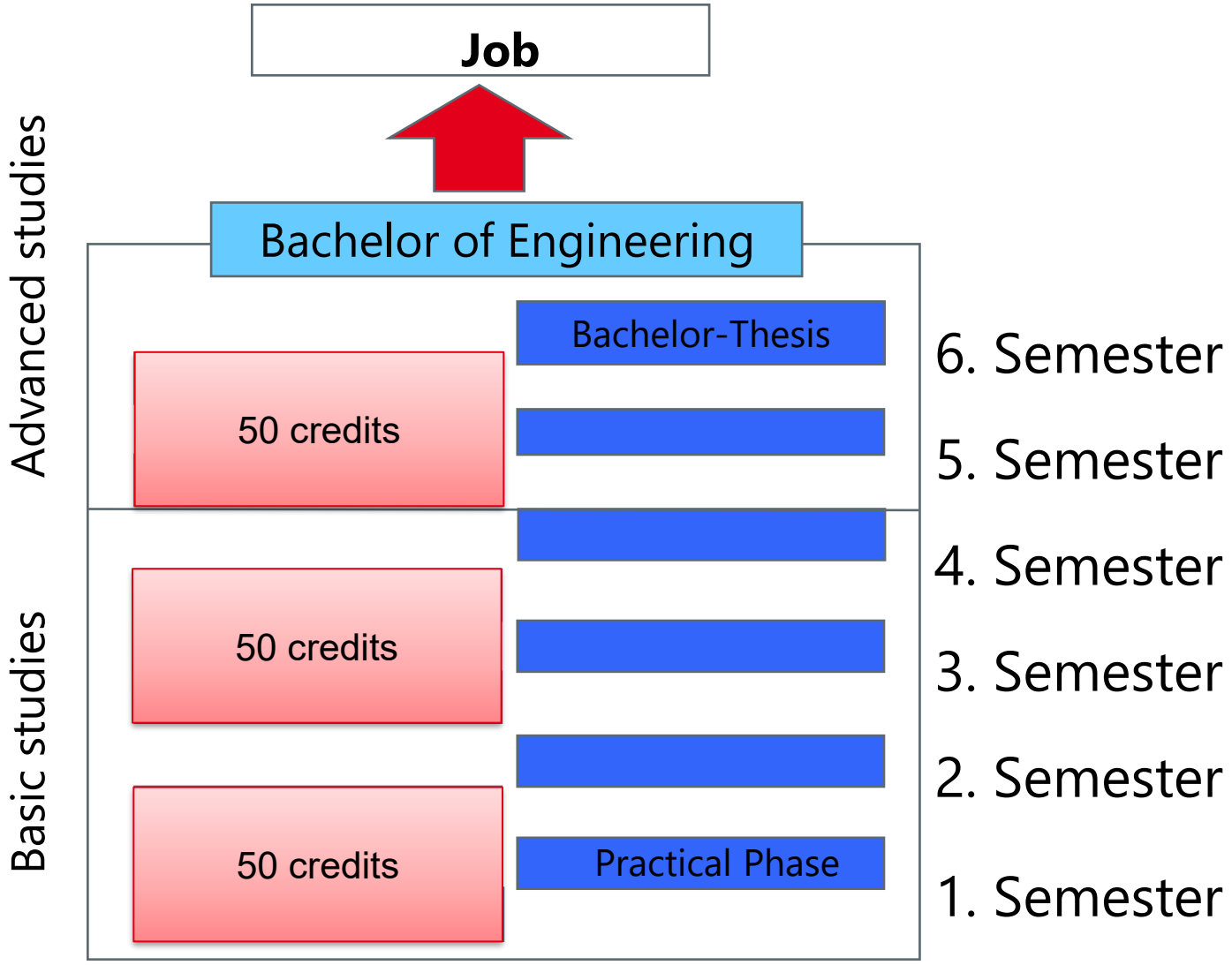
52 week – (4-)6 week vacation = 46 weeks

46 week * 40 h/ week **=** **1840 h**

*(46 week * 35 h/week = 1610 h)*

Because of the Practical Phases the DHBW Programs are called Intensive Programs, which results in 210 credits

Credits in the theory parts (150 credits)



Credits in the theory parts(engineering)

Lectures and Exams

- Moduls with the same size (credits, workload)
- One credit equals 30 hours workload
- Contact hours to self work is about 1:2
- Equal weighting of modules
- Exams at the end of the modul
  (typically at the end of the semester or academic year)
- Future: Introduction of Microcredential)

Moduleplan 1.Year Electrical Engineering

Modules	1.Semester (h per week)	2.Semester (h per week)	credits
Mathematics I	6		5
Mathematics II		6	5
Physics	3	3	5
Principles of Electrical Engineering I	6		5
Principles of Electrical Engineering II		6	5
Digital Technology	3	2	5
Elektronics + Measuring Techniques I		6	5
Computer Science I	5		5
Computer Science II		4	5
Business Processes	4		5
Practice Part I			20
Weekly Contact Hours	27	27	70

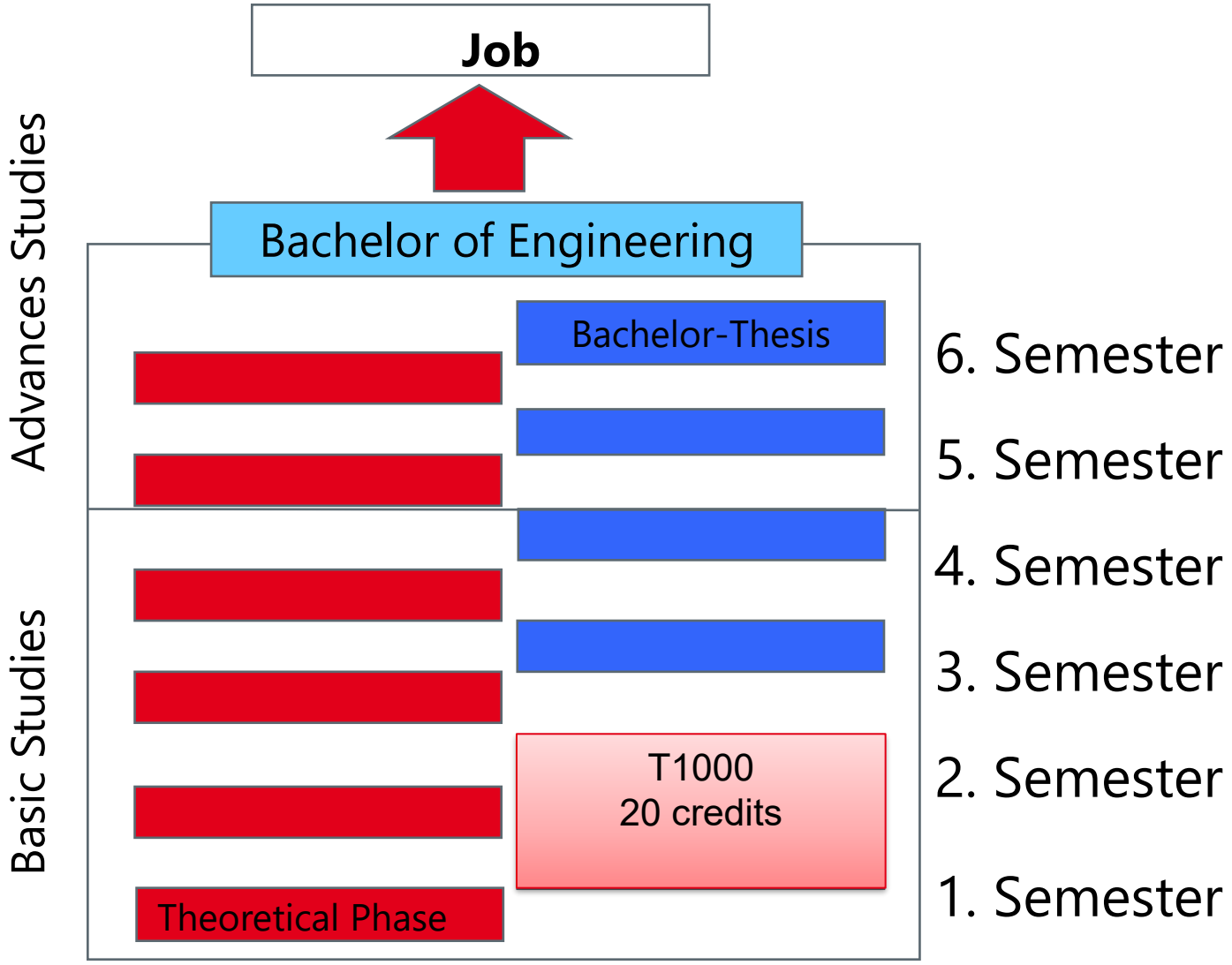
Moduleplan 2.Year Electrical Engineering/Automation

Modules	3.Half-year	4.Half-year	Credits
Mathematics III(Multiple variables, Differential Equ., Mathlab)	4	2	5
Principles of Electrical Engineering III (Maxwell Equ.)	6		5
Signal and Systems (Fourier, Laplace,..)	4		5
Basics of Control Systems (Closed Loop)		4	5
Electronics + Measurement Techniques II	4	2	5
Microcomputersystems	3	3	5
Gen. Profilemodule 1: Principles of EE IV (Waves and Lines)		5	5
Gen. Profilemodule 2: Prog. Logic. Controller		5	5
Local Profilemodule 1/ Informatics III	4		5
Local Profilemodule 2/ Basics of Automation(PLC)		4	5
Practice Part II			20
Weekly Contact Hours	25	25	70

Moduleplan 3.Year Electrical Engineering/Automation

Module	5.Half-year	6.Half-year	Credits
Automation	6		5
Control Systems	3	3	5
Sensors and Actors	6		5
Computer Systems I	7		5
Local Profilmodul 3 (Development of Digital Systems)		6	5
Local Profilmodul 4/Computer Applications in Automation		4	5
Local Profilmodul 5/ Special Subject in Automation		4	5
Lokal Profilmodul 6/Technical Management		5	5
Research Project I	1		5
Research Project II		1	5
Practice Part III			8
Bachelor Thesis (12 weeks)			12
Weekly Contact Hours	23	23	70

Credits in the practical parts(60 credits)



Credits in the practical parts

T1000 Module Praxis I (600 h = 20 Credits)

content

Getting knowledge of manual and maschinery basic skill of the specific study course (e.g. drilling, milling) and basic knowledge of technical and organisational processes in the company

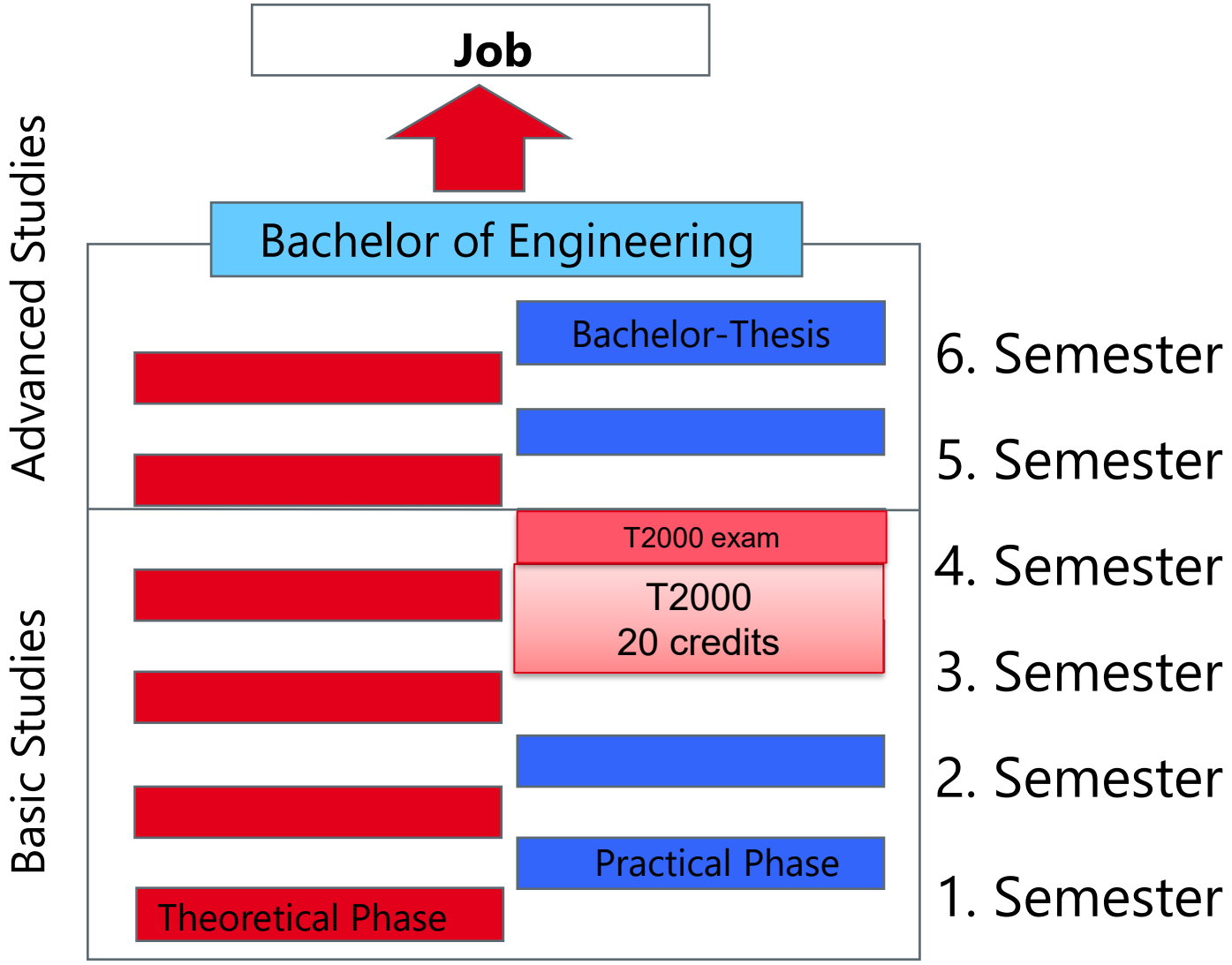
Usage of the essential fundamentals of scientific work through preparation and writing of a report

Short introduction in scientific work

Transfer of Credits (without grade=> passed or failed)

- report
- sequence- and reflexion-report

Credits in the practical parts



Credits in the practical parts

T2000 Module Praxis II (600 h = 20 credits)

content:

Getting knowledge of engineering type working

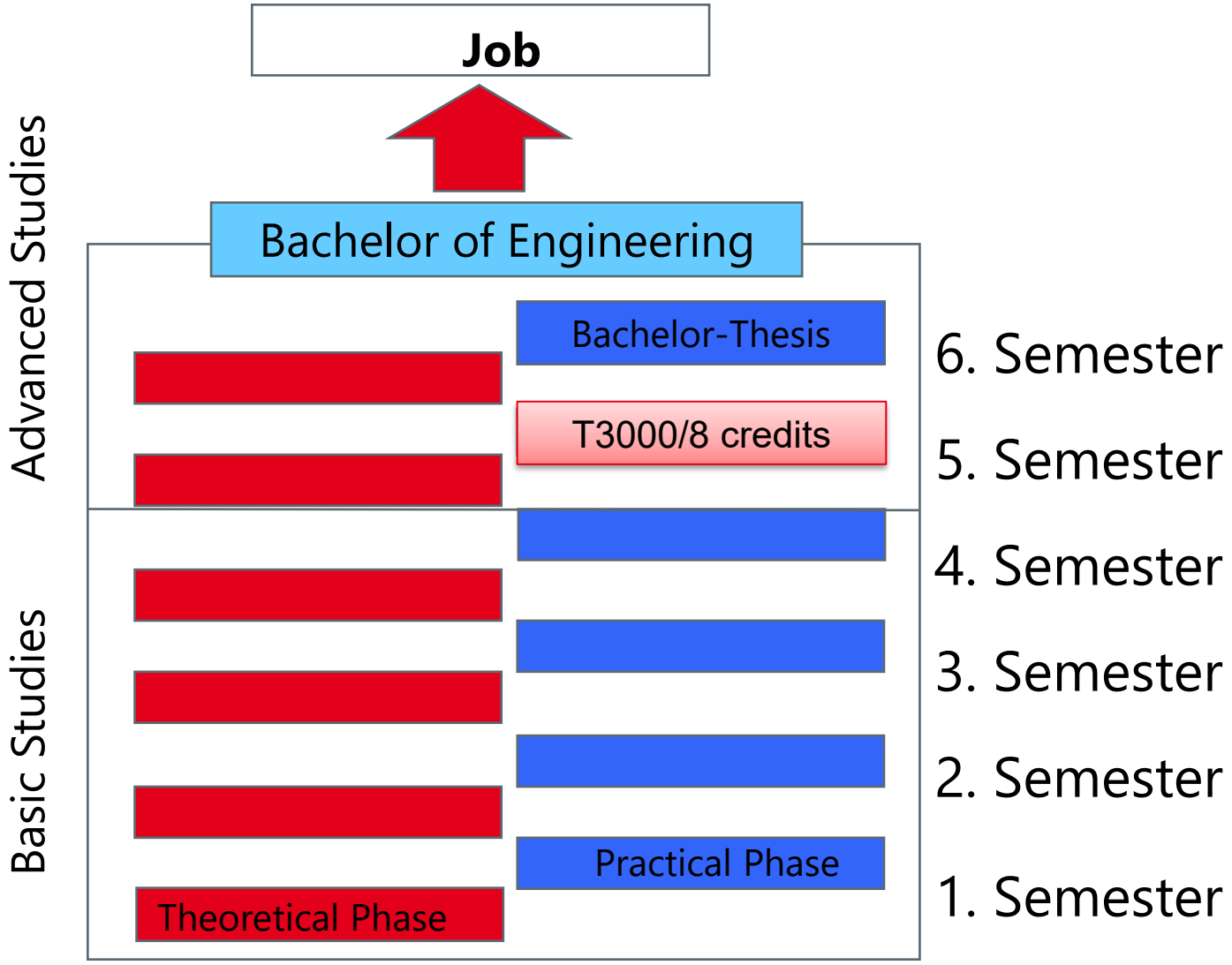
Application of theoretical knowledge and practical experience on a specific project under supervision. Use of essential basics of scientific work through preparation and writing a report and preparation and performing a presentation.

Advanced introduction in scientific work

Transfer of credits (graded)

- project-report (Grading done by the company supervisor)
- sequence- and reflexion-report
- **Oral examination at a board of examiners**

Credits in the practical parts



Credits in the practical parts

T3000 Module Praxis III (240 h = 8 Credits)

content:

Inital training on engineering type work in a specific department.

Applications of deepened theoretical knowledge and practical experience on a specific project in a team under supervision

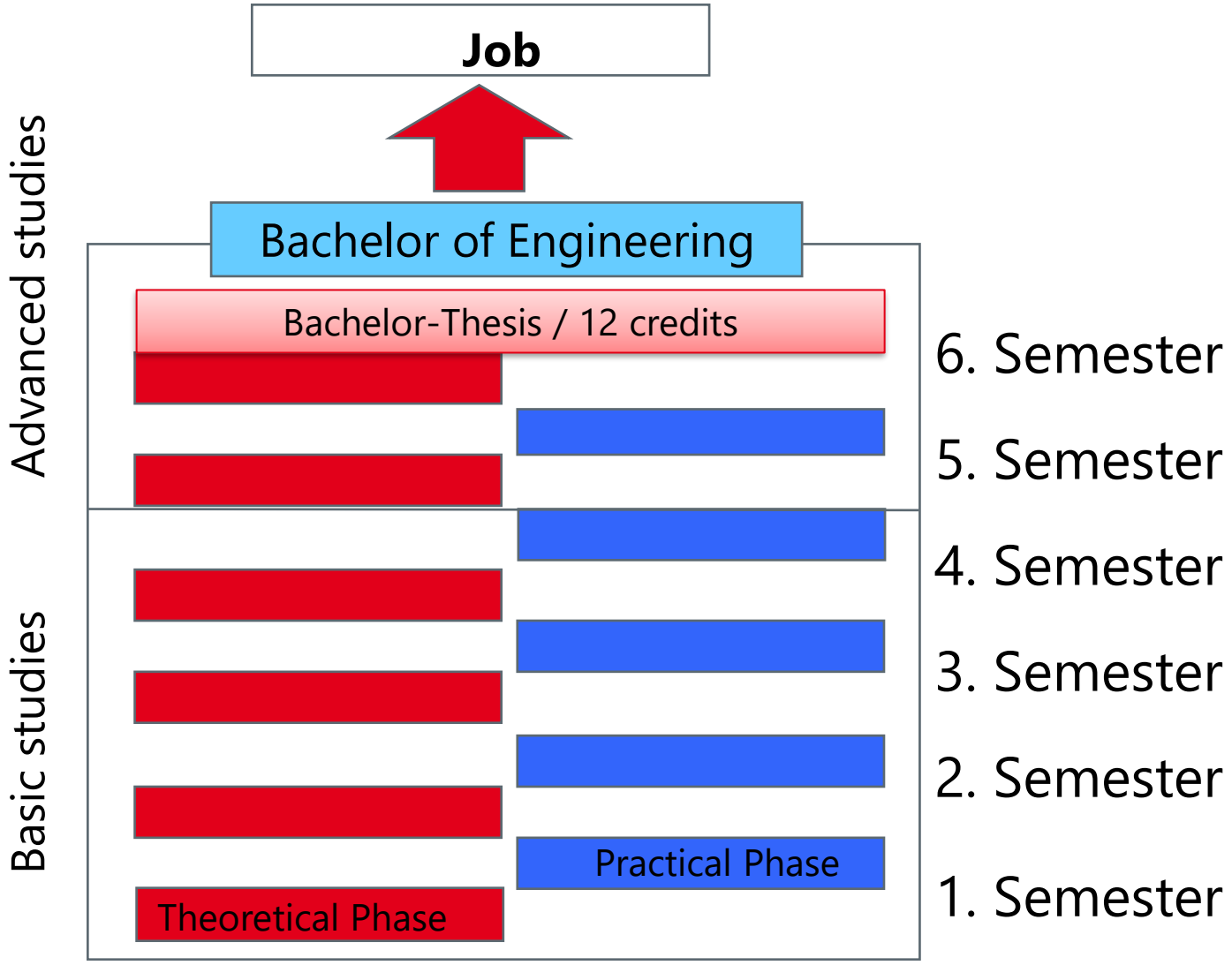
Application of scientific work style through preparation and writing a report

Seminar scientific work

Transfer of credits (passed or failed)

- project-report (graded by the supervisor at the company)
- sequence- and reflexion-report

Bachelor-Thesis at the company



Credits in the practical parts

T3300 Module Bachelorarbeit (360 h = 12 Credits)

content:

Independent work on a specific engineering style task in the practical field in a specific space of time.

Application of complex theoretical knowledge and practical experiences on a specifc project.

Application of scientific research , inquiry and online search methods for research and reporting.

Escorted by 2 counsellors

1. supervisor from the company (defines the theme)
2. lecturer from the university (parttime or tenure)

Grading is done by the average of the two grades, which are given by the two councellors

Rating of reports and thesises part1

Criterion	Failed 0 - 49 %	Passing 50 - 57 %	Satisfactory 58 - 74 %	Good 75 - 90 %	Excellent 91 - 100 %	Weight within area	Fulfillment of goal in %	Weighted score
Area	Content Development			(55% Weight)				
Technical development (taking account of the level of difficulty)	Insufficient treatment, first signs of solutions only	Sufficient treatment of the topic, approaches to solution shown, partial results explained	Satisfactory treatment of the topic, approaches to solution critically analyzed, partial results explained	Good treatment of the topic, approaches to solution critically analyzed and justified, results substantiated	Very good treatment of the topic regarding approaches to solution and results, additional alternatives and aspects illustrated	15		0,0
Use of technical knowledge	Little knowlede of the state of technology	Basic knowledge, but with significant gaps in technical knowledge	Basic knowledge, but with moderate gaps in technical knowledge	Good knowledge of fundamentals, only details are missing	Comprehensive knowledge, very good technical knowledge	10		0,0
Application of methods and tools	Little/no usage of engineering methods and tools for problem analysis and finding solutions	Partial usage of engineering methods and tools for analysis and finding solutions	Sensible application of engineering methods and tools	Conscious selection and sensible application of engineering methods and tools	Conscious selection and systematic and valid application of engineering methods and tools	10		0,0
Practicability of result	Result as a solution of the problem not usable in practice	Result usable as a first basis for a practical solution	Result can, with modifications, be implemented in practice	Good result, can be implemented with few modifications	Very good result, can be implemented without modifications or is implemented already	5		0,0
Creativity	No own ideas; known results are not carried over to the new situation	Only occasionally own ideas; rudimentary applicaton of known solutions to the problem	Few own ideas used; successful application of model solutions	Own, perhaps also original, ideas contributed and partially implemented	Many own/original ideas contributed and implemented in new, successful approaches to solutions	5		0,0
Economical evaluation	No or little thinking in terms of economy in the solution	Partially thinking in terms of economy in approaches or in vital aspects	Thinking in terms of economy in approaches or in vital aspects	Good general thinking in terms of economy in the entire solution	Very good economical thinking in entire solutions; connections taken into account, non-financial advantages recognized	5		0,0
Aspects of sustainablility (ecological, economic, social)	No aspects of sustainability incorporated, results have no environmental impact	Some aspects of sustainability are mentioned. Little incorporation of environmental aspects	Sustainability included as side aspect of results, environmental impacts and social aspects partially considered	Explicit integration and analysis of sustainability, conscious integration of environmentally friendly results	Sustainability and environmental aspects as central part of the overall topic, including fundamental analysis	5		0,0

Rating of reports and thesises part2

Area	Working Scientifically			(45% Weight)				
Independence, initiative	Comprehensive support necessary	Some independence, significant support necessary	Largely independent work, little support necessary	Independent development, good initiative	Extraordinary independence and initiative	5		0,0
Systematic approach	No systematic approach recognizable in procedure and result	Significant shortcomings in systematic approach regarding methods, setting of priorities and structure of contents	Methods reasonably applied and followed, priorities partially set reasonably, structure of contents comprehensible	Methods used consistently, priorities set reasonably, focus on the essential, structure of content explicit	Methods applied systematically, priorities set reasonably, clear focus on the essential, clear structure of content	10		0,0
Documentation	Significant shortcomings in documentation, incomplete and vague	Reasonable outline and development of thoughts, key statements mentioned in summary, shortcomings in written expression and in conciseness of the texts	Reasonable outline and development of thoughts, texts easily understandable, solid summary, good written expression	Logical outline and development of thoughts, texts easily understandable, supported by examples, graphics, etc., summary to the point, good written expression	Consistently logical outline and development of thought, precise texts, concise summary, meaningful examples, graphics etc., very good written expression	10		0,0
Literature research	Little literature, bibliography is missing or poor	Moderate literatur research, often secondary literature, unspecific standard texts or online sources that appear to be randomly selected	Significant primary and secondary literature, further literature and qualified online sources are researched	Extensive primary and secondary literature, appropriate basic texts, qualified online sources researched	Very comprehensive and broad literature research while making use of current publications	10		0,0
Use of literature	Citation of literature without using it, reference to literature without commenting on it	Use of literature to support main statements, material incompletely exploited, no discussion	Multiple support of most statements with literature, discussion of the literature for significant statements	Thorough support of all statements, corresponding discussion of the literature, partial reflection, good exploitation of the literature	In addition thorough, goal-directed and critical reflection of the literature, development of own interpretations / solutions	10		0,0
Sum of weighted scores (rounded)						100		0
	Recommended grade (to be complemented by "Explanation of the evaluation") (1,0 for 100 points / 4,0 for 50 points)							**5,0**

Guidelines for the successful implementation of the practical phases at the DHBW –Success factor practical training –

1 / The **practical phases are planned deliberately**. The students will acquire a broad spectrum of professional knowledge through the assignment of various tasks in several departments.

2 / **At an early stage, the departments are informed of the time and duration** of their students' practical training as well as their development. They also receive information regarding the qualitative requirements of the practical phases (in accordance with the DHBW model and with regard to the practical phase module description).

3 / The departments **provide professionally qualified supervision** and **sufficient time** to instruct the students.

4 / **Tasks and project goals are communicated clearly with the students**, who are expected to work independently on the elaboration of these projects.

Guidelines for the successful implementation of the practical phases at the DHBW –Success factor practical training –

5 / The projects and tasks assigned to the students contribute **to personal and professional development** and create value for internal and external customers.

6 / Through collaboration, **students gain insight into business processes**.
The entrusted tasks provide scope for **one's own initiative, one's own way of thinking and creativity.** Increasing complexity and responsibility regarding the presentations of problems (during the practical project) provide students with the opportunity to acquire competence and employability.

7 / The students have a **consistent supervisor**/coach for the duration of their studies
In regularly scheduled meetings, the students receive feedback for their professional and personal development.

DHBW
Duale Hochschule
Baden-Württemberg

www.dhbw.de



What is EU4DUAL?



Who is part of EU4DUAL?

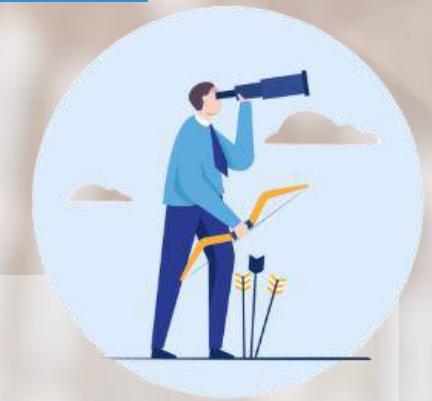
United in purpose,

diverse in expertise.




74,420
Students
6,691
Staff members
588
Dual study programmes
40
Campuses

2 Mission & Vision



Mission

is to use transnational Dual Education, a model involving close collaboration between students, academics and business stakeholders, to help Europe address major societal challenges.

The challenges that include climate change, de-carbonisation, digitisation, etc. will pose in society in general and industry in particular and will shape a new landscape of work and profession. The unique profile of our institutions will play a very important role in addressing these challenges.



Vision

is to become the global top-quality reference for Dual Education. We will form the largest integrated Dual-Education institution in the world – a multi-campus, multi-disciplinary institution, committed to close integration between academia, industry and regions.

We intend to use our collective expertise to help solve global challenges of industry to society – using Dual Education to make Europe greener, more equitable and more economically successful.

Dual study in Chile: Ingeniería con la Empresa | UDD

Universidad del Desarrollo's implementation of the DHBW-inspired dual model – launched 2021, five years of expansion

70+	200+	97	75%	5	2
Partner companies	**Dual students** since 2021	**Graduates**	**Hired immediately after the program**	**Engineering degrees** industrial, computer science, civil, geology, mining	**Campuses** Santiago & Concepción · 2 intakes per year

2021 — **Launch**
Program created for Industrial Engineering

2022–25 — **First cohorts**
Annual Industrial cohorts; employment-contract model and governance consolidated

2026 — **Computer Science**
First Computer Science cohort joins the program (June)

Dec 2026 — **Second intake**
First time with two annual intakes

2028 — **Next wave**
Biomedical Eng. and Computer Science with AI; 220 dual places per year

How it works and what dual students do

Students join in their 4th year as paid, part-time employees of a partner company

Industrial Engineering

- 21 months · 7 alternating quarters
- 30 hrs/week · employment contract

Typical projects

- Process improvement (Lean)
- Supply chain & logistics
- KPI dashboards & cost analysis
- PMO & sustainability

Computer Science

- 18 months · 3 days company / 2 days university
- 20 hrs/week · employment contract

Typical projects

- Software & system integrations
- Data, BI & machine learning
- Generative-AI automation
- RPA, cloud & cybersecurity

What makes it work

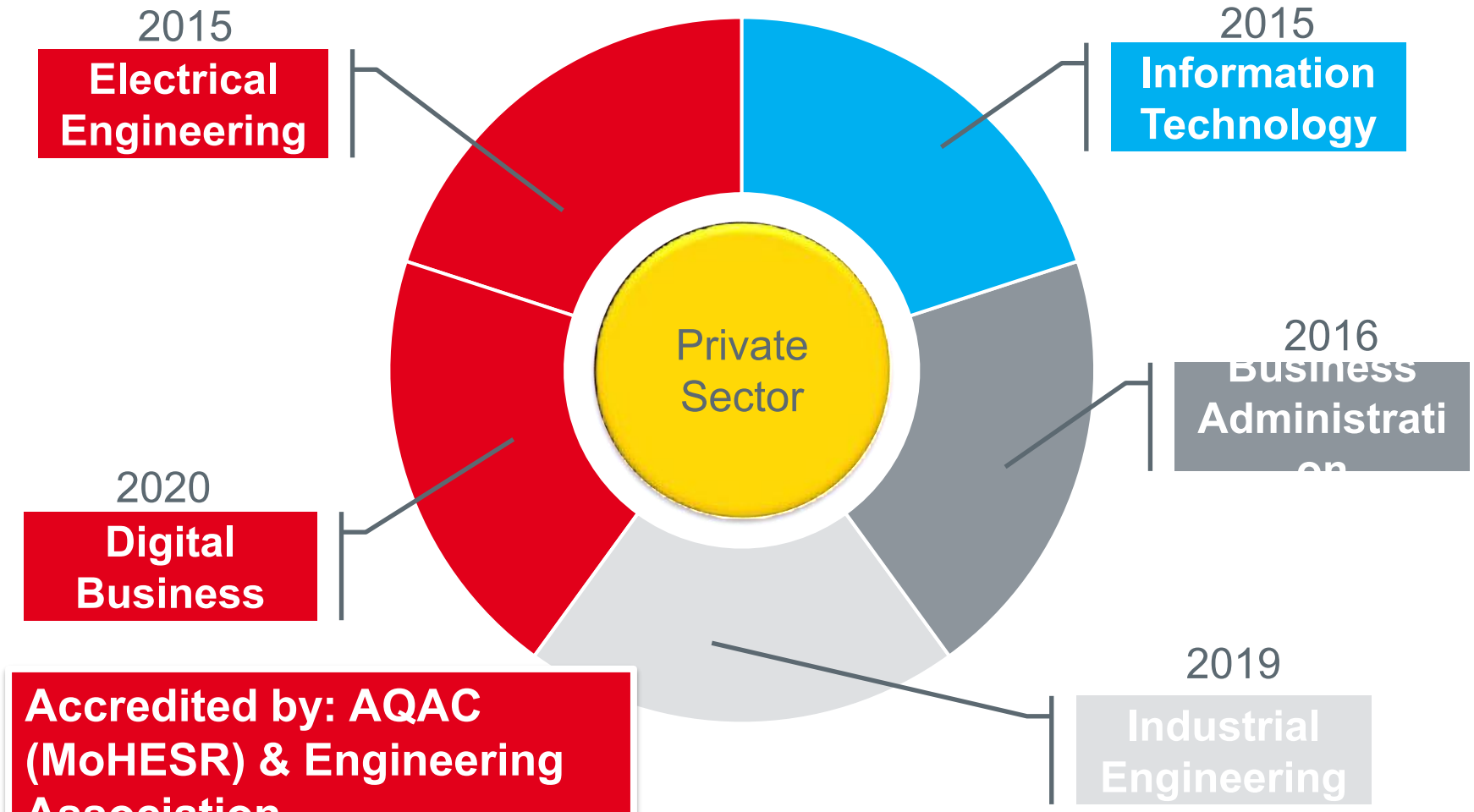
Employment contract
Students are employees, not interns

Alternating schedule
Company and classroom inside the curriculum

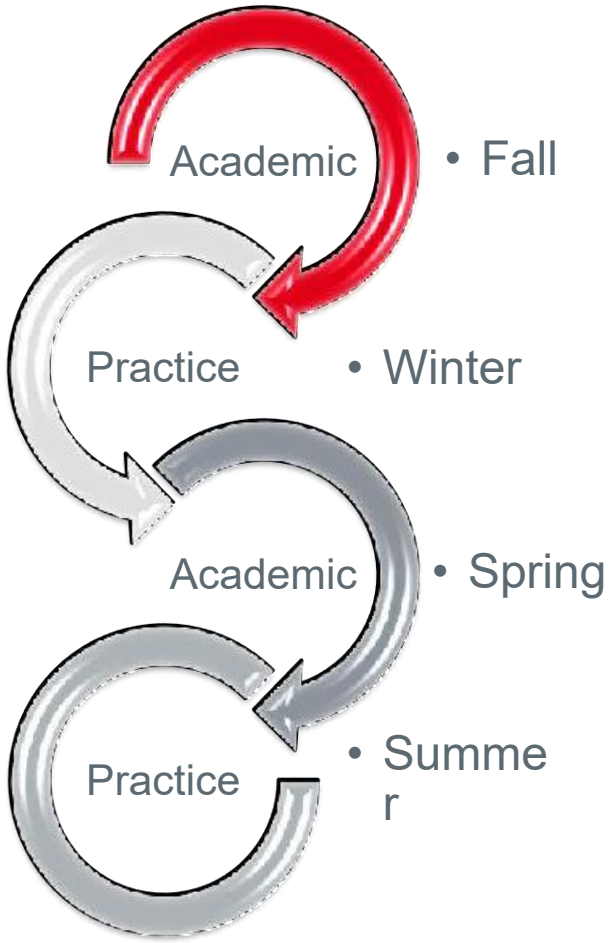
Institutional governance
Board and Advisory Council with company executives

Dual evaluation
Company supervisor + UDD tutor as career coach

DS Bachelor Programs at Alquds(East Jerusalem)



DS Concept



- Reference Model:
- Degree: Bachelor
- 50% @ University
- 50% @ Partner
- Duration: 4 years

Regulations for accreditation of further Dual Studies programs in Palestine (MoHESR July 2021)

DS Students Figures

880
44% females
Overall Enrolment

411
49% females
Currently Enrolled

346
50% females
Graduates

70%
Employed

Thank You Very Much for Your Attention

