



Co-funded by the  
Erasmus+ Programme  
of the European Union



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

**Activity 1.1.:**

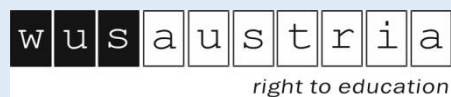
**REPORT**

**Review of best practices and experiences in DHE**

**ANALYSIS OF DUAL HIGHER EDUCATION STUDY PROGRAMMES  
IN AUSTRIA, GERMANY AND SPAIN**

**Prepared by Almir Kovacevic and Louise Sperl**

**WUS Austria**





Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

Project acronym:	<b>DUALSCI</b>
Project full title:	Strengthening capacities for the implementation of dual education in BH higher education
Project No:	610251-EPP-1-2019-1-RS-EPPKA2-CBHE-SP
Funding scheme:	ERASMUS+
Project start date:	January 15, 2020
Project duration:	36 months

Abstract	<p>This report on the state-of-the-art in dual higher education includes results from information provided on 15 dual study programmes in higher education from programme countries in different industrial sectors. Each of the three programme countries (Austria, Spain, Germany) has analysed 5 study programmes which are being implemented at the respective partner university and at other universities in the programme countries.</p> <p>The report also elaborates the concept of “Dual Higher Education (DHE)” and the overall framework for dual education at the respective universities and beyond.</p> <p>The report concludes with a short summary and conclusions regarding options for DHE programmes in the partner country Bosnia and Herzegovina.</p>
----------	---

Title of document:	1.1 Review of best practices and experiences in DHE
Work package:	WP 1: Research and needs analysis
Activity:	Act. 1.1.: Review of best practices and experiences in DHE
Last version date:	28 September 2020
File name:	DUAL Analysis of DHE Study Programmes
Number of pages:	60
Dissemination level:	Consortium



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

VERSIONING AND CONTRIBUTION HISTORY

Version	Date	Revision description	Partner responsible
V1	18 June 2020	First draft based on survey inputs received from EU partners (Austria, Spain, Germany)	WUS Austria, other EU partners
V2	18 August 2020	Second/pre-final draft with feedback from EU partners	WUS Austria, other EU partners
V3	9 Sept. 2020	Final draft with feedback incorporated from all EU partners	WUS Austria, other EU partners
V4	21. Sept. 2020	Final draft with additional comments reflected from DHBW	WUS Austria, DHBW
V5	28 Sept. 2020	Final draft including formal amendment of title	WUS Austria, Coordinator

DISCLAIMER: The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

## CONTENT

<b>1.) INTRODUCTION.....</b>	<b>6</b>
<b>2.) ANALYSIS OF STUDY PROGRAMMES AT UNIVERSITIES IN PROGRAMME COUNTRIES .....</b>	<b>10</b>
<b>SUMMARY .....</b>	<b>10</b>
<b>AUSTRIA .....</b>	<b>11</b>
<b>GERMANY .....</b>	<b>13</b>
<b>SPAIN .....</b>	<b>15</b>
<b>3.) COMPARISON OF DATA AND CONCLUSIONS FOR WP 2 .....</b>	<b>17</b>
<b>SIMILARITIES AND DIFFERENCES BETWEEN THE 3 PROGRAMME COUNTRIES .....</b>	<b>17</b>
<b>KEY ELEMENTS FOR FUTURE DHE MODELS/PROGRAMMES.....</b>	<b>20</b>
<b>4.) MAIN SOURCES.....</b>	<b>23</b>
<b>ANNEX: DETAILED ANALYSIS OF 15 DHE PROGRAMMES IN AUSTRIA, GERMANY AND SPAIN .....</b>	<b>24</b>
<b>AUSTRIA .....</b>	<b>24</b>
<b>GERMANY .....</b>	<b>36</b>
<b>SPAIN .....</b>	<b>49</b>



## LIST OF ABBREVIATIONS

BA	Bachelor
DHE	Dual higher education
ECTS	European Credit Transfer System
EQF	European Qualification Framework
EU	European Union
FH	Fachhochschule (in English: University of Applied Sciences)
HE	Higher education
HEI	Higher Education Institution
HVET	Higher Vocational Education and Training
IP	Industry partner
PhD	Doctor of Philosophy
UAS	University of Applied Science
VET	Vocational Education and Training
WP	Work Package



## 1.) INTRODUCTION

### Context

This report on the state-of-the-art in dual higher education programmes across different programme countries has been prepared in the framework of the DUALSCI project. The main aim of the DUALSCI project is to improve the competences of higher education graduates and their employability in cantons and entities of Bosnia and Herzegovina taking into consideration good practices from EU countries.

This report includes results from information provided on 15 dual study programmes<sup>1</sup> in higher education from programme countries in different industrial sectors. Each of the three programme countries (Austria, Spain, Germany) has analysed 5 study programmes which are being implemented at the respective partner university and at other universities in the programme countries.

The following study programmes have been analysed in the framework of this report:

#### AUSTRIA

Name of study programme	Implementing University
PTO – Production Technology and Organization	FH JOANNEUM, Graz
ENP – Engineering and Production Management	FH JOANNEUM, Graz
Mobile Software Development	FH JOANNEUM, Graz
HSD – Hardware-Software Design	FH OBERÖSTERREICH
Electrical Engineering Dual	FH VORARLBERG

#### GERMANY

Name of study programme	Implementing University
Business Administration	Baden Wuerttemberg Cooperative State University Heilbronn (DHBW Heilbronn)
Management & Business Psychology	FOM Hochschule für Oekonomie und Management
Cooperative Study Model – Degree Programme Engineering	Heilbronn University of Applied Science
Advanced Midwifery Science	Baden Wuerttemberg Cooperative State University, Stuttgart
Mechatronics	Technische Hochschule Ingolstadt

<sup>1</sup> This includes both MA and BA programme. Detailed information on each study programme can be found in the annex,



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

**SPAIN**

<b>Name of study programme</b>	<b>Implementing University</b>
Degree in Automotive Engineering	University of the Basque Country
Master in Digital Manufacturing	Dual Engineering University School
Degree Primary Education	University of Lleida
Master Degree in Informatics Engineering	University of Lleida
Degree in Process and Product Innovation Engineering	Dual Engineering University School

The report also elaborates the concept of “Dual Higher Education (DHE)” and the overall framework for dual education at the respective universities and beyond. In this respect, the project also builds upon the results of other relevant projects in this field – in particular the EU project ApprenticeshipQ ([www.apprenticeshipq.eu](http://www.apprenticeshipq.eu)).

The report concludes with a short summary and conclusions regarding options for DHE programmes in the partner country.

### ***How to read this report***

The **introductory section** includes a brief presentation of the DUALSCI project and information on the concept of dual higher education.

The **second section** consists of an analysis of study programmes based on detailed inputs provided by EU partner universities on 15 DHE study programmes in Austria, Germany and Spain. A brief summary, highlighting similarities and differences in the three countries is followed by short country briefs, highlighting key features such as programme design, curriculum development, regulatory frameworks and quality assurance in each of the three countries covered by this research.

**Section three** provides a comparison of the DHE framework in these three countries based on results from the EU project “ApprenticeshipQ” and concludes with recommendations of key aspects to be considered for WP2.

The **last section** (Annex) provides in depth information on each of the 15 study programmes analysed within the context of this report.



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

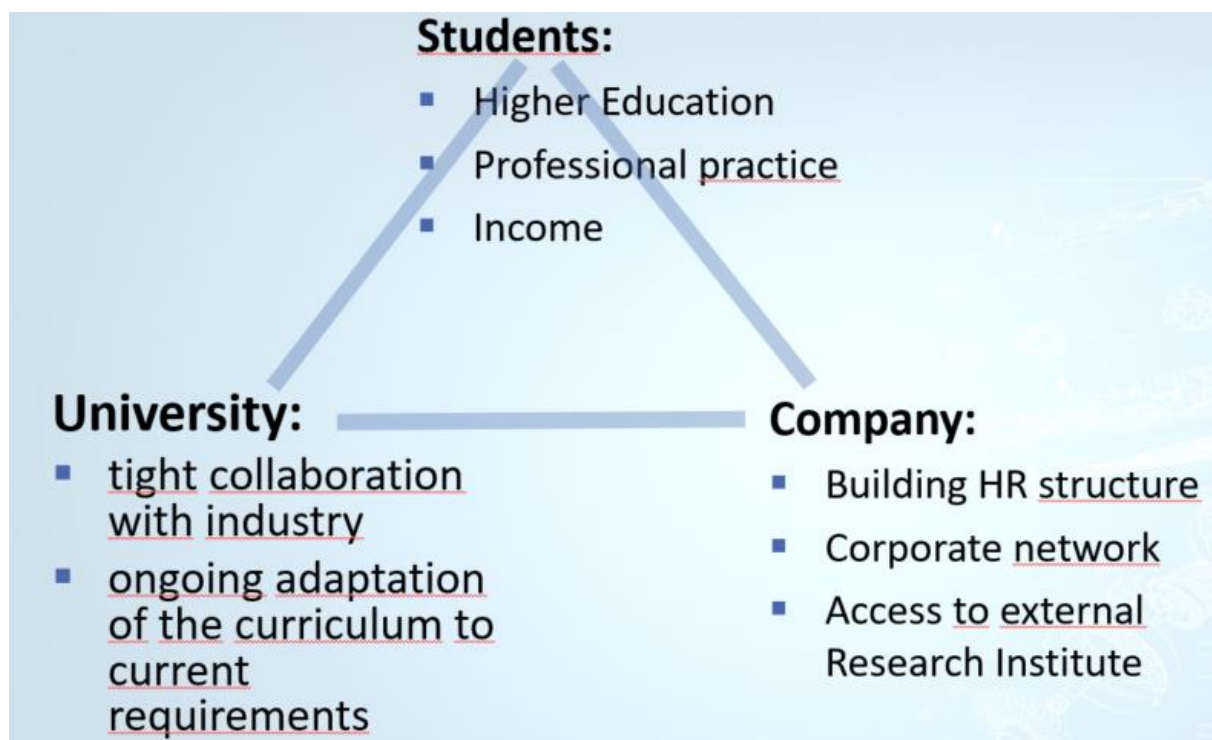
## Dual Higher Education (DHE)

**Dual Higher Education** is an approach that formally integrates students' academic studies with work experience in enterprises/industry. There are a number of different types of DHE programmes. These have different advantages and disadvantages: for learners, for employers, for schools and colleges, and for governments. DHE can be used to achieve a number of different objectives, such as:

- to develop vocational skills that contribute to recognised vocational qualifications;
- to develop general work habits and job-readiness;
- to help students to understand what is involved in jobs so that they make better career choices;
- to give disadvantaged people and job seekers access to opportunities to work that they might not have otherwise.<sup>2</sup>

A key issue for policy makers and social partners is how to choose the right type of programme for the right purpose, while best meeting stakeholders' needs.

This approach to education relies upon a three-way partnership between the student, the Higher Education Institution (HEI) and the company.



Source: Hagen Hochrinner, FH JOANNEUM, 20. 6. 2020.

<sup>2</sup> ETF, A handbook for policy makers and social partners in ETF countries [http://ec.europa.eu/dgs/education\\_culture/repository/education/library/publicatioens/etf-wbl-handbook\\_en.pdf](http://ec.europa.eu/dgs/education_culture/repository/education/library/publicatioens/etf-wbl-handbook_en.pdf), 2014, chapter 4 page 13).





## Strengthening capacities for the implementation of dual education in BH higher education (DUALSCI)

The exact format of collaboration is usually established in specific agreements between the company and the HEI, outlining the number of students received by the company (e.g. 10 to 20<sup>3</sup>), whether students work for free or receive a salary, the number of hours per semester (e.g. 150-200<sup>4</sup>) and other rights and responsibilities of students and the company. Companies are also expected to find mentors for students who will be able to guide them during their practical work at the company and who assess their work at the end of the work term. There is no obligation to employ students after their graduation.

The below outlined types of learning concepts or models are often used related to work-based learning<sup>5</sup>. These concepts have been developed for use in the tertiary educational level:

- **Curriculum-integrated learning:** Is a model of learning that describes the development of integrated lessons helping students make connections across subjects and disciplines.
- **Work-related learning:** Planned activity that uses the context of work to develop knowledge, skills and behaviours useful in the workplace, including learning through the experience of work, learning about work and working practices, and learning the skills for work.
- **Work-based learning:** Is an educational strategy that provides students with real-life work experiences where they can apply academic and technical skills and develop their employability skills.
- **Work-integrated learning:** Are forms of experiential learning where the site of learning either occurs in the workplace or where the learning is strongly associated with a workplace.
- **Cooperative education:** A term that is commonly used in North America to refer to programmes in which learners spend time in several workplaces (companies) and receive academic credit for the work experience, but in which there may be little connection between what the student does in the workplace and the curriculum of the school or college.

In Europe mostly the term “Dual Education” is used. It is related to the system of apprenticeship in Germany, Austria and Switzerland. This system requires two learning venues (university and company) with a coordinated curriculum for both learning places.

---

<sup>3</sup> In Austria, approximately 1 to 5 students are received by each company; in Germany the ratio is between 10 to 60 students per company.

<sup>4</sup> This is depending on the number of ECTS granted for the practical part. In Austria, for example, a minimum of 125h of internship corresponding to 5 ECTS are required.

<sup>5</sup> These concepts have been defined and used also by the EU project ApprenticeshipQ ([www.apprenticeshipq.eu](http://www.apprenticeshipq.eu)).



## **2.) ANALYSIS OF STUDY PROGRAMMES AT UNIVERSITIES IN PROGRAMME COUNTRIES**

### **SUMMARY**

As can be seen from the examples of study programmes implemented in the partner countries, **different models** are being implemented. While objectives are similar, the exact modalities and approaches are differing, depending most importantly on the **regulatory framework and institutional landscape** in a given country.

While some DHE programmes are more strongly regulated on the national level and thus following a unified approach in terms of programme design and implementation (Austria), some seem to be more flexible (e.g. Germany). All programmes are accredited by the National Accreditation Agencies.

Generally, all programmes are following the **Bologna criteria**, providing for BA and MA programmes, with both horizontal and vertical mobility and including the right to access the next educational level.

In all cases, **students are paid** for their work in enterprises. In almost all cases, work is based on **specific working contracts**.

In terms of partnerships with Industrial Partners (IPs), there are considerable differences with regard to size of companies and the selection process of students: While in Austria students are searching for companies for their practical work, it is common in Germany for companies to identify and select students for DHE programmes.

There is a mix between **teaching at universities and learning at practical work at companies**, usually starting with theoretical semester(s) in the beginning of the programme. The ratio between practical and theoretical teaching in the BA programmes is in average 60:40 and 50:50 in MA programmes. The ratio of teachers from HEIs and IPs approximately amounts to 60:40 and in MA programmes to 50:50.

**Student assessments** are conducted by HEI staff and supported by IPs. The final thesis is usually co-mentored by an IP representative, but led by the university professor.

Among the 15 analysed programmes, the majority has a **technical focus, but there are also examples from management, business administration, education and health sector**.



## AUSTRIA

### Scope of analysis:

#### **5 Academic Programmes at Universities of Applied Science (UAS)<sup>6</sup>**

In Austria, UASs are the main “owners” of DHE programs. Nevertheless, it is also possible and even not unusual for “classical” HEIs to assume a partner role in the development and implementation of DHE programs.

The DHE programmes in Austria are standardised in terms of their format and layout. The majority of DHE programmes in Austria can be found in technical disciplines and follow the regular Bologna requirements (6 semesters for Bachelor programs (180 ECTS) and 4 semesters for Master Programmes (120 ECTS)). DHE graduates have the right to continue education on Master or PhD level.

The EQF Level is also unified with EQF 6 for Bachelor and EQF 7 for Master Programmes.

EQF LEVEL 8	ACADEMIC LEVEL	DOCTORATE	MAINTENANCE MANAGERS AND SUPERVISORS, VOCATIONAL TEACHERS
EQF LEVEL 7		MASTER	
EQF LEVEL 6	POST UPPER SECONDARY LEVEL	BACHELOR	
EQF LEVEL 5		HIGHER NATIONAL DIPLOMA	MAINTENANCE TECHNICIANS
EQF LEVEL 4	UPPER SECONDARY LEVEL	HIGHER NATIONAL CERTIFICATE, UPPER SECONDARY DIPLOMA	MAINTENANCE MECHANICS
EQF LEVEL 3	SECONDARY LEVEL	SECONDARY DIPLOMA OR VOCATIONAL DIPLOMA	
EQF LEVEL 2	PRIMARY LEVEL	SECONDARY SCHOOL WITH NO DIPLOMA	
EQF LEVEL 1		PRIMARY SCHOOL	

Source: <https://www.maintworld.com/R-D/Application-of-European-Qualification-Framework-EQF-in-Maintenance>

<sup>6</sup> For detailed information on the programmes analysed, please see the annex.



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

DHE programs can also be in the format of Double or Joint Degrees.

Accreditation is regulated by law and is carried out by the National Accreditation Agency.

Curricula of DHE programmes are usually offered as “Curriculum Integrated models”<sup>7</sup>. Both, Bachelor and Master DHE Programmes are offered by UASs.<sup>8</sup>

All programmes are developed jointly from representatives of HEIs and industry partners (IP). HEIs have the lead in the development and implementation of the programmes which is also reflected in the ratio between teachers from HEIs (60%) and IPs (40%) being involved in the educational process.

Besides curriculum development and revision, IPs are also involved in mentoring the final thesis (co-mentoring together with HEI mentor).

HEIs have the overall responsibility for the conduction of student assessments. The involvement of the IP in the student assessments is related to the practical part of the education (work at companies) and is not unified. IP mentors are usually supporting HEI staff by issuing recommendations for student assessments, or drafting reports based on a standardised reporting form.

IPs have a direct working contract with all DHE students in line with the Austrian Labour Law. Usually Students have part time contracts (50% of the fulltime working contract).

The first two semesters are usually carried out only by HEIs. Starting from the 3<sup>rd</sup> semester, the educational process is divided between HEIs and IPs with a division of approximately 50:50 at Bachelor level. On the Master level, it is common for IPs to have even more responsibilities in the education of students (60:40%).

Teaching Staff has to have at least 3 years of relevant Industry experience and an academic degree amounting to a minimum of 300 ECTS.

The employment rate after graduation is very high ranging from 90 and 100% while drop-out rates are between 15 and 30%.<sup>9</sup>

---

<sup>7</sup> Curriculum-integrated learning is a model of learning that describes the development of integrated lessons helping students make connections across subjects and disciplines.

<sup>8</sup> Based on the existing law, UASs are not entitled to offer PhD programs.

<sup>9</sup> For more information on dual education in Austria, see also [www.dualstudieren.at](http://www.dualstudieren.at).



## GERMANY

### Scope of analysis:

#### ***5 Academic Programs at 2 Universities of Applied Science (UAS), one Cooperative (DUAL) University and one Private Specialised Higher Education Institution (HEI)<sup>10</sup>***

In Germany, the DHE Programmes offered by different HEIs are not unified. The Program design and layout depend on the discipline/occupation and the approach taken by the respective HEIs.

Curricula are offered in the format of “Curriculum Integrated”, “Work Integrated” and “Work based” models.<sup>11</sup>

All HEIs can offer DHE programmes at Bachelor and Master level. Programmes are available not only in technical disciplines such as engineering, but also in fields such as management, business administration and the health sector. All programmes follow the Bologna criteria but are not unified (6 or 7 semesters for Bachelor programs (180 to 210 ECTS)) and 4 semesters for Master Programmes (60 to 120 ECTS). Graduates from DHE programmes have the full right to continue education towards a Master degree and further to PhD level. Some technical study programmes are aligned and combined with VET Programs. In these cases, graduates obtain a HEI and VET degree and occupation.

Accreditation is regulated by the law and is carried out by the National Accreditation Agencies.

All programmes are developed jointly by representatives of HEIs and Industry partners (IP). HEIs have the lead in the development and implementation of the programs which is also reflected in the ratio between teachers from HEIs (60%) and IPs (40%) being involved in the educational process including certain variations.

The EQF Level is unified with EQF 6 for Bachelor and EQF 7 for Master Programmes. Some programmes also offer a VET degree at EQF 4 level.

Besides curriculum development and revision, Industry Partners are involved in mentoring of the final thesis (co-mentoring with HEI mentor) as well.

---

<sup>10</sup> For detailed information on the programmes analysed, please see the annex.

<sup>11</sup> **Curriculum-integrated learning:** Is a model of learning that describes the development of integrated lessons helping students make connections across subjects and disciplines. **Work-based learning:** Is an educational strategy that provides students with real-life work experiences where they can apply academic and technical skills and develop their employability skills. **Work-integrated learning:** Are forms of experiential learning where the site of learning either occurs in the workplace or where the learning is strongly associated with a workplace.



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

HEIs have the overall responsibility for student assessments. Involvement in student assessments by the IP is related to the practical part of the education and not unified in terms of modalities and format.

The Industry offers training and as in the case of DHBW programmes a working contract for DHE students. Some HEIs have framework contracts with IPs and then with students (no direct IP-student contracts).

In some HE-institutions, the first two semesters are carried out only by HEIs. Starting from the 3rd semester, the educational process is divided between HEIs and IPs with a division of approximately 50:50 at Bachelor level. On the Master level, it is common for IPs to have even more responsibilities in the education of students (60 : 40%).

Teaching staff needs to have relevant industry experience and a relevant academic degree.

Employment rates after graduation are very high and range between 80 and 90% while drop-out rates are between 5 and 20%.



## SPAIN

### Scope of analysis:

#### **5 Academic Programs at 3 Higher Education Institutions (HEIs)<sup>12</sup>**

Similar to Germany, in Spain DHE Programs might be offered by different type of HEIs (e.g. private and public). The program design depends on the discipline, the future occupation and the approach taken by the respective HEIs. DHE Programs are offered in fields such as Engineering, Education or Business Studies.

Curricula are offered in the format of “Curriculum Integrated”, “Work Based” and “Work Integrated” models.<sup>13</sup>

Bachelor and Master DHE Programs can be offered by all HEIs following the Bologna Model (8 semesters for Bachelor (240 ECTS)) and 2 to 4 semesters for Master Programmes (60 to 120 ECTS). DHE programmes are not unified. All graduates from DHE programmes have the full right to continue education towards a Master degree and further to PhD level.

The framework of the DHE programmes is developed jointly by representatives of HEIs and IPs. In addition, IPs are in charge of developing the set of competencies for the practical part of the teaching process.

The DHE programs are jointly implemented by the HEI and IPs but led by the respective HEI. The ratio between teachers from HEIs and IPs is between 50 to 75% HEIs versus 25 to 50% IPs. This, is not formally established, however, in the Basque Country, minimums have been defined. The same ratio is being applied for the involvement of HEI staff and IPs in student assessments which, however, is also not formally regulated. Involvement in student assessments by the IP is related to the practical part of the education and not unified.

The EQF Level is unified and is following the EQF scheme with EQF level 6 for Bachelor and EQF level 7 for Master Programmes.

In Spain, it is a common practice to have employment contracts between students and IPs or university-company collaboration agreements between HEIs and IPs. There is no standardised employment contracts for DHE.<sup>14</sup>

---

<sup>12</sup> For detailed information on the programmes analysed, please see the annex.

<sup>13</sup> Curriculum-integrated learning is a model of learning that describes the development of integrated lessons helping students make connections across subjects and disciplines. Work-integrated learning: Are forms of experiential learning where the site of learning either occurs in the workplace or where the learning is strongly associated with a workplace.

<sup>14</sup> At the VET level, a standardised employment contract has been defined by the state.



Co-funded by the  
Erasmus+ Programme  
of the European Union



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

A collaboration agreement is signed between the university, the company and the student, and defines the rights and obligation of the partners.

Accreditation is regulated by the law and is carried out by the established Accreditation Agencies.

No special requirements for the Teaching Staff have been identified.

Data about employment rates are not available for all programmes (some of them have been recently introduced), but existing data show that employment rates after graduation are very high for DHE programmes (between 80 and 100 %), while drop-out rates range between 20 and 36 %.





### 3.) COMPARISON OF DATA AND CONCLUSIONS FOR WP 2

#### SIMILARITIES AND DIFFERENCES BETWEEN THE 3 PROGRAMME COUNTRIES

The following tables provide an overview of the main characteristics of a dual study approach in the programme countries:

#### AUSTRIA

Austria

Bachelor and Master Programms

Type of apprenticeship / characteristics	dual study program, coop and workintegrated HE	full time dual/ cooperative education	full time (regular)	part time (work enabeling)	full time (health sciences)
Educational programm EQF level Bachelor / Master	6 / 7	6 / 7	6 / 7	6 / 7	6 / -
Type of programm (HE, HVET)	HE	HVET	HE	HVET	HVET
Duration [semesters]	6	6	6	6	6
Balance between education in university and company	60 - 70% university, different models: 3 months, 1/2 week	50% university, 50% company (4x 12 week a 40h)	1 internship between 4th and 6th semester	working full time, studying at weekends	short placements in hospitals
Curriculum intergrated, work-related, work-based, work-integrated	work-integrated	work-integrated	curriculum integrated	work-based	work-integrated
Formal contract	employment contract (+ educational part)	employment contract (+ educational part)	internship contract	employment contract	placement without payment

Source: H.Hochrinner, characterization of study programmes in Austria (EQF 6-7), 08.06.2020



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

Germany

	full time Dual Study Programmes (University, UAP)	full time Dual Bachelor Programmes (University of Cooperative Education DHBW)	full time Dual Study Programmes (UAP, University of Cooperative Education DHBW)	part time Dual Master Programmes extra-occupational (CAS at University of Cooperative Education DHBW)	part time Dual Study Programmes extra-occupational (public or private HE institutions)	Advanced Vocational Programme (Trade Schools, Technical Schools, HealthSchools)
Education programme EQF-Level Bachelor / Master	6 (partly incl .4) / 7	6	6 incl. 4	7	6 / 7	6 (or 5)
Type of programme (HVET, PHE, HE)	HE, PHE	HE, PHE	PHE	PHE	HE	HVET (certification by chambers or state authorities)
Average Length of programme Bachelor / Master	3 years / 5 years	3 years	3.5 up to 4 years	2 years or more	3.5 years / 2 years	1-3 years
Balance between education in institution and company	different models depending on institution, alternation varying between daily, weekly, monthly or irregular rhythm	alternating 50% in university, 50% work experience (each 4 x 12 weeks per year)	integrated training, mostly alternating in blocks of some months, entirely practical phase in the first year or in the last year	Individualised, extraoccupational, allocation of study time (and places) varies, e.g. evening, weekend, off work time	extraoccupational, allocation of study time varies, e.g. evening, weekend, off work time	only school, or extraoccupational, allocation of study time varies, e.g. evening, weekend, off work time
curriculum-integrated, work-related, work-based, work-integrated	curriculum integrated, work integrated	curriculum intergrated, work integrated	partly work based, work integrated, ,curriculum integrated	curriculum integrated, work integrated	curriculum integrated, work integrated	work integrated or merely school based
Formal contract	mostly yes (depending on state law and institution)	yes, between company and student	yes, between student and company or health institution	yes, regular work contract between company and student	yes, regular work contract between company and student	yes if work integrated, no, if school based

Source: DHBW, July 2020



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

**SPAIN**

Type of Apprenticeship / Characteristics	Dual programme	Dual programme	HVET	HVET
Education programme (EQF-Level)	6	7	5	5
Type of programme (HVET, PHE, HE)	HE 240 ECTS Two options: - dual itinerary (optional/student group) - dual program (mandatory/full group)	HE 60-120 ECTS Two options: - dual itinerary (optional/student group) - dual program (mandatory/full group)	Non-university HE	Non-university HE
Time Average Length of programme	4 years	1-2 years	2 years	3 years
Balance between education in institution & company	Between 25 to 50% in company	Minimum 40% or 30 ECTS	Between 1450 and 1600 hours in VET institution and between 800 and 1200 hours in company	Between 1750 and 1950 hours in VET institution and between 1800 and 3100 hours in company
Curriculum integrated, work-related, work-based, work-integrated	Curriculum-integrated, work-based, work-integrated	Curriculum-integrated, work-based, work-integrated	Curriculum-integrated, work-based, work-integrated	Curriculum-integrated, work-based, work-integrated
Formal contract	University-company agreement or working contract payment	University-company agreement or working contract payment	Grant or working contract payment	Grant or working contract payment

\* Dual university education has not been developed at the State level - neither conceptually nor in regulatory frameworks. The information provided in this table is based on the existing framework established for the Basque Country.



## **KEY ELEMENTS FOR FUTURE DHE MODELS/PROGRAMMES**

Based on the inputs on study programmes in EU programme countries of the DUALSCI project and the analysis of the DHE framework in programme countries from the EU project ApprenticeshipQ, the following elements have been identified for consideration when developing future DHE models/programmes for Bosnia and Herzegovina:

- DHE programmes need to consider the **Bologna requirements** This is to enhance horizontal and vertical mobility as well as to simplify recognition of degrees. Furthermore, this promotes trust by employers. The programmes should also clearly indicate the relevant EQF level (6 – BA, 7 – MA).
- DHE graduates need to have **full access to the next educational level** (e.g. MA, PhD) both at applied and scientific (non-dual) HE programmes.
- As and where feasible it can also be considered to award a **VET degree** together with the BA.
- In term of the dual approach chosen, it is recommended to opt for **curriculum integrated or work-based models** since these approaches provide best for a systematic integration of work experiences.
- In terms of contractual relations, it is recommended for the IP to have direct **working contracts** with the student for the period of their practical work.<sup>15</sup> As feasible, these contracts should be remunerated to support financial independence of the student.
- **Relation theoretical and practical work:** It is recommended that on BA level, the first 2 semesters focus on theoretical work with first work-based experiences from semester 3 to 6 (for example, 80:20/theoretical vs practical work). At MA level, the focus should be on the practical experiences in R&D and can be designed in different ways, depending on the fields of study and institutional framework. As a minimum, students should be required to carry out 60% of their study period with the IP doing practical work.
- **Mentors in companies** should receive training in order to get prepared for their highly responsible role. Regular meetings between company mentors and HEI teaching staff are recommended (at least once or twice a year). In general, obligations of companies and mentors should be openly discussed and clearly defined. This also includes questions such as the remuneration of mentors or the amount of time spent for mentoring.

---

<sup>15</sup> In Austria, there are usually employment contracts between students and the respective companies; in Germany student-company- university contracts are common. It is recommended to BiH partners to explore both approaches and to identify the most feasible solution in this regard.



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

- In terms of **curriculum development and revision**, teams should consist of representatives both from HEIs and from industry (suggestion: 50:50). It is also recommended that IPs have at least 5 years of experience in their respective field/discipline.
- Both academic staff and IP partners should be involved in the **teaching process**. It is recommended that both should have industry experience, but teachers from IPs should have approximately 5 years of prior industry experience plus a relevant academic degree (at least MA).

**Assessment:** The HEI should be primarily responsible for the assessment of students but should request inputs on students' performance from IPs in line with an established reporting and grading system.

- **Final thesis:** It is recommended for the final thesis to be co-mentored by HEI and IP representatives who were involved in the teaching process. The IPs should grade the applied part of the thesis while the university takes responsibility for the academic and theoretical part of the thesis. It is also recommended for the HEI mentor to visit the company before the student starts working on the thesis. Overall, it is considered very essential for HEI staff to get to know the respective companies, to meet mentors and to develop and maintain personal contacts.
- At the level of **Ministry** there should be a **clear catalogue of criteria** which outlines the requirements a study programme has to fulfil in order to be called "dual education in HE". Otherwise the definition of what is DHE might get lost instead of branded. As an example, the Austrian Ministry of Education, Science and Research has set up the **following criteria for characterizing the dual degree programmes in Austria:**
  - Repeated sequence of theoretical phases and internships with continuous reflection.
  - Internships out beyond the normal scope of an internship in a technical college degree program, both in terms of time and in terms of the specification of the content.
  - Acquisition of curricular defined competencies takes place at two places of learning and is characterized by the combination of science and focus on implementation.
  - Admission process for college and company are in the responsibility of each partner and are coordinated.
  - Company must take a training commitment which is suitable to convey the intended course content.



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

- Organization of the theoretical and practical phases, the conditions for an acceptable total time load (ECTS) for students.
- Relationship of the three partners (students, universities and companies) is subject to mandatory regulations for quality assurance.

In **Germany**, the outline of the **framework for German Dual Higher Education programmes** is as following:

- Applicants have to be generally eligible for HE admission.
- Involvement of companies in the recruitment process has to be documented and is part of the accreditation.
- Bachelor programmes last three years and offer 180 ECTS credit points: at least 120 ECTS credit points for theory and at least 30 ECTS credit points for practice.
- There is a clear relation between theory and practice (academic relevance of practice has to be proven).
- The programme includes a final thesis with 6-12 ECTS credit points.
- The overall annual working time of students (academic work load for work and study plus any additional work for the company) has to be “reasonable” (There is no mentioning of an actual limit but information from some institutions indicate an average of around 2.000 hours per year, which is clearly more than the typical full time employment).
- Each faculty has to meet criteria for regular Universities of Applied Sciences, e.g. at least 40 % of teaching has to be provided by employed professors. This is a precondition in order to guarantee institutional research activities and also creates options for profound and intensive student mentoring.
- The existence of a quality management system for the cooperation of the two different learning environments and of a well described mentoring and counseling system (during practise) for students has to be proven.



Co-funded by the  
Erasmus+ Programme  
of the European Union



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

#### **4.) MAIN SOURCES**

Dual education in Austria; [www.dualstudieren.at](http://www.dualstudieren.at)

ETF, A handbook for policy makers and social partners in ETF countries  
[http://ec.europa.eu/dgs/education\\_culture/repository/education/library/publications/etf-wbl-handbook\\_en.pdf](http://ec.europa.eu/dgs/education_culture/repository/education/library/publications/etf-wbl-handbook_en.pdf), 2014

EU-COOP COOPERATIVE and WORK INTEGRATED HIGHER EDUCATION, A handbook for implementing Co-op education model, CWIHE Erasmus Project, 2017

EU project ApprenticeshipQ; [www.apprenticeshipq.eu](http://www.apprenticeshipq.eu)

Canadian Association for Co-operative Education, Co-operative Education Manual. A Guide to Planning and Implementing Co-operative Education Programs in Post-Secondary Institutions



## ***ANNEX: DETAILED ANALYSIS OF 15 DHE PROGRAMMES IN AUSTRIA, GERMANY AND SPAIN***

### **AUSTRIA**

<b>NAME OF STUDY PROGRAMME 1:</b>	<b>PTO – Production Technology and Organization</b>
<b>Website link:</b>	<a href="https://www.fh-joanneum.at/produktionstechnik/bachelor/">https://www.fh-joanneum.at/produktionstechnik/bachelor/</a>
<b>Name of implementing university:</b>	FH JOANNEUM Gesellschaft mbH.
<b>Implementing faculty/department:</b>	IAP – Institute of Applied Production Sciences/ Department – Engineering
<b>How is DHE defined/understood at your university?</b>	“Dual study” describes the content and structural integration of at least two equivalent learning locations - university and company - for a jointly designed training at university level.
<b>Joint or double degree? Yes/no - if yes, please indicate.</b>	No.
<b>Please indicate the occupation of graduates from this programme (eg IT engineer, physiotherapist etc).</b>	Bachelor of Science in Engineering, BScE
<b>Please indicate economic sector where graduates are typically employed (eg banking, insurance, construction, health etc.).</b>	Engineering
<b>Degree upon completion:</b>	BSc
<b>Education programme (EQF level):</b>	6
<b>Type of programme (HVET, PHE, HE):</b>	Full time dual HVET
<b>Obligatory external accreditation of the programme: yes/no</b>	Yes
<b>Responsible body for accreditation:</b>	AQ Austria – Agency for Quality Assurance and Accreditation
<b>Length and overall structure of the programme:</b>	6 semesters 180 ECTS
<b>Entrance exam: yes/no</b>	Yes
<b>Fee: yes/no</b>	No
<b>Teaching staff from HEIs in %</b>	60 %
<b>Teaching staff from industry in %</b>	40 %
<b>Specific requirements for teaching staff (e.g. practical experiences)</b>	3 years of practical experience in industry, Finished study program at HE with minimum 300 ECTS





Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

/managerial position in industry etc.).	
<b>Balance between education in institution &amp; company (in % and number of days/months)</b> e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	1st year – 100% university 2nd and 3rd year - 50%/50% (6 months university/6 months industry)
<b>Dual approach:</b> <b>Curriculum-integrated, work-related, work-based, work-integrated.</b> Please select appropriate answer.	work integrated
<b>Formal contracts with company (yes/no).</b> If yes – please indicate type of contract	No Contract only between student and company.
<b>Payment of students by industry partners (yes/no, partly..)</b>	Yes (in average a half employment, students are paid 14 times according to Austrian Law)
<b>Support provided by the programme</b> (i.e. service matching and career guidance)	Partly University plays a supporting role by finding internships.
<b>Please indicate how/at what stages industry partners are involved in curriculum design and review</b> (e.g. definition of functions, competences, LOs and syllabi).	Yes Development team = faculty + selected representatives of industry Yearly meetings with representatives of industry
<b>Assessment:</b> <b>Student assessment by HEIs (in %)</b> <b>Student assessment by industry partners (in %)</b>	Only university Exception is bachelor thesis
<b>Modalities of assessment during apprenticeship periods:</b>	Standardized evaluation document
<b>Final thesis: ratio of mentors from HEIs and industry</b>	1 academic mentor + 1 in-company mentor per student
<b>Drop-out rates in the last 5 years</b> (if applicable):	Yes, 15% (due to pre-selection process)
<b>Upon completion, is there a right to continue education at universities (yes/no, MA/PhD level)?</b>	Yes MSc level



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	Yes 98%
<b>Key resource documents:</b>	Application for Accreditation
<b>Additional comments/observations:</b>	/

<b>NAME OF STUDY PROGRAMME 2:</b>	<b>ENP – Engineering and Production Management</b>
<b>Website link:</b>	<a href="https://www.fh-joanneum.at/produktionstechnik/bachelor/">https://www.fh-joanneum.at/produktionstechnik/bachelor/</a>
<b>Name of implementing university:</b>	FH JOANNEUM Gesellschaft mbH.
<b>How is DHE defined/understood at your university?</b>	“Dual study” describes the content and structural integration of at least two equivalent learning locations - university and company - for a jointly designed training at university level.
<b>Implementing faculty/department:</b>	IAP – Institute of Applied Production Sciences/ Department - Engineering
<b>Joint or double degree? Yes/no – if yes, please indicate.</b>	No
<b>Please indicate the occupation of graduates from this programme (eg IT engineer, physiotherapist etc).</b>	Master of Science in Engineering, MScE
<b>Please indicate economic sector where graduates are typically employed (eg banking, insurance, construction, health etc.).</b>	Engineering
<b>Degree upon completion:</b>	MSc
<b>Education programme (EQF level):</b>	7
<b>Type of programme (HVET, PHE, HE):</b>	HVET
<b>Obligatory external accreditation of the programme: Yes/no</b>	Yes
<b>Responsible body for accreditation:</b>	AQ Austria- AQ Austria – Agency for Quality Assurance and Accreditation
<b>Length and overall structure of the programme:</b>	4 semesters 120 ECTS
<b>Entrance exam: yes/no</b>	Yes
<b>Fee: yes/no</b>	No
<b>Teaching staff from HEIs in %</b>	60
<b>Teaching staff from industry in %</b>	40



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Specific requirements for teaching staff</b> (e.g. practical experiences/managerial position in industry etc.).	3 years of practical experience in industry, Finished study program minimum at HE with min. 300 ECTS
<b>Balance between education in institution &amp; company (in % and number of days/months)</b> (e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	40% university/ 60% company (7months company/5 months university)
<b>Dual approach:</b> <b>Curriculum-integrated, work-related, work-based, work-integrated.</b> Please select appropriate answer.	Work integrated
<b>Formal contracts with company (yes/no).</b> <b>If yes – please indicate type of contract</b>	No Contract only between student and company.
<b>Payment of students by industry partners (yes/no, partly..)</b>	Yes In average is a half employment, students are paid 14 times according to Austrian Law.
<b>Support provided by the programme</b> (i.e service matching and career guidance)	Partly, university plays a supporting role by finding placements
<b>Please indicate how/at what stages industry partners are involved in curriculum design and review</b> (e.g. definition of functions, competences, LOs and syllabi).	Yes Development team = faculty + selected representatives of industry. Yearly meetings with representatives of industry.
<b>Assessment:</b> <b>Student assessment by HEIs (in %)</b> <b>Student assessment by industry partners (in %)</b>	Only by university. Exception is the master thesis.
<b>Modalities of assessment during apprenticeship periods:</b>	Standardized evaluation document
<b>Final thesis: ratio of mentors from HEIs and industry</b>	1 academic mentor + 1 in-company mentor per student
<b>Drop-out rates in the last 5 years</b> (if applicable):	Yes, 10% (due to pre-selection process)
<b>Upon completion, is there a right to continue education at</b>	Yes. PhD



Co-funded by the  
Erasmus+ Programme  
of the European Union



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>universities (yes/no, MA/PhD level)?</b>	
<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	Yes. 100%
<b>Key resource documents:</b>	Application for Accreditation
<b>Additional comments/observations:</b>	/



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>NAME OF STUDY PROGRAMME 3:</b>	<b>Mobile Software Development</b>
<b>Website link:</b>	<a href="https://www.fh-joanneum.at/mobile-software-development/bachelor/en/">https://www.fh-joanneum.at/mobile-software-development/bachelor/en/</a>
<b>Name of implementing university:</b>	FH JOANNEUM Gesellschaft mbH.
<b>How is DHE defined/understood at your university?</b>	Mobile Software Development is the third dual program at the FH JOANNEUM. The dual phase starts in the third semester after a year of fulltime studies. During the third to the sixth semester the students are from Wednesday to Friday in the partner company with at least 20 hours each week. Monday and Tuesday are reserved for the university and the courses are held. The courses are partly online.
<b>Implementing faculty/department:</b>	Applied Computer Sciences
<b>Joint or double degree? Yes/no – if yes, please indicate.</b>	Yes Joint degree with Graz University of Technology and CAMPUS O2 UNIVERSITY OF APPLIED SCIENCES
<b>Please indicate the occupation of graduates from this programme (eg IT engineer, physiotherapist etc).</b>	Mobile Software Developer
<b>Please indicate economic sector where graduates are typically employed (eg banking, insurance, construction, health etc.).</b>	IT
<b>Degree upon completion:</b>	Bachelor of Science
<b>Education programme (EQF level):</b>	Level 6
<b>Type of programme (HVET, PHE, HE):</b>	HVET
<b>Obligatory external accreditation of the programme: Yes/no</b>	Yes
<b>Responsible body for accreditation:</b>	AQ Austria- AQ Austria – Agency for Quality Assurance and Accreditation
<b>Length and overall structure of the programme:</b>	6 semester
<b>Entrance exam: yes/no</b>	yes
<b>Fee: yes/no</b>	no
<b>Teaching staff from HEIs in %</b>	100
<b>Teaching staff from industry in %</b>	0
<b>Specific requirements for teaching staff (e.g. practical)</b>	Practical experiences



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

experiences/managerial position in industry etc.).	
<b>Balance between education in institution &amp; company (in % and number of days/months)</b> e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	33,3 and 66,6 % 2 day at institution and 3 days a week in company
<b>Dual approach:</b> <b>Curriculum-integrated, work-related, work-based, work-integrated.</b> Please select appropriate answer.	Work-integrated
<b>Formal contracts with company (yes/no). If yes – please indicate type of contract</b>	Yes Letter of Intent and an apprenticeship contract
<b>Payment of students by industry partners (yes/no, partly..)</b>	Yes
<b>Support provided by the programme</b> (i.e service matching and career guidance)	Yes Matching events and different individual offers
<b>Please indicate how/at what stages industry partners are involved in curriculum design and review</b> (e.g. definition of functions, competences, LOs and syllabi).	
<b>Assessment:</b> <b>Student assessment by HEIs (in %)</b> <b>Student assessment by industry partners (in %)</b>	8% The partners evaluate the goals for each semester. Those goals are 50 percent of the praxis course.
<b>Modalities of assessment during apprenticeship periods:</b>	Regular assessments for the courses. Reports and the evaluation of the semester goals in the praxis course.
<b>Final thesis: ratio of mentors from HEIs and industry</b>	
<b>Drop-out rates in the last 5 years</b> (if applicable):	The program started 2018.
<b>Upon completion, is there a right to continue education at universities (yes/no, MA/PhD level)?</b>	Yes



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	The program started 2018.
<b>Key resource documents:</b>	
<b>Additional comments/observations:</b>	

<b>NAME OF STUDY PROGRAMME 4:</b>	<b>HSD – Hardware-Software-Design</b>
<b>Website link:</b>	<a href="http://www.fh-ooe.at/hsd">http://www.fh-ooe.at/hsd</a>
<b>Name of implementing university:</b>	University of Applied Sciences Upper Austria
<b>How is DHE defined/understood at your university?</b>	“Dual study” describes the content and structural integration of at least two equivalent learning locations - university and company - for a jointly designed training at university level.
<b>Implementing faculty/department:</b>	School for Informatics, Communications and Media/ ESE – Embedded Systems Engineering
<b>Joint or double degree? yes/no – if yes, please indicate.</b>	No
<b>Please indicate the occupation of graduates from this programme (eg.IT engineer, physiotherapist, etc.)</b>	Bachelor of Science in Engineering
<b>Please indicate economic sector where graduates are typically employed (eg banking, insurance, construction, health etc.).</b>	Engineering
<b>Degree upon completion:</b>	BSc
<b>Education programme (EQF level):</b>	VI
<b>Type of programme (HVET, PHE, HE):</b>	HE (higher education)
<b>Obligatory external accreditation of the programme: yes/no</b>	Yes
<b>Responsible body for accreditation:</b>	AQ Austria – Agency for Quality Assurance and Accreditation
<b>Length and overall structure of the programme:</b>	6 semesters, 180 ECTS
<b>Entrance exam: yes/no</b>	No
<b>Fee: yes/no</b>	Yes



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Teaching staff from HEIs in %</b>	60 %
<b>Teaching staff from industry in %</b>	40 %
<b>Specific requirements for teaching staff</b> (e.g. practical experiences/managerial position in industry etc.).	3 years of practical experience in industry, finished study program at HE with minimum 300 ECTS
<b>Balance between education in institution &amp; company (in % and number of days/months)</b> e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	1st year – 100% university 2nd and 3rd year - 50%/50% (6 months university / 6 months industry)
<b>Dual approach:</b> Curriculum-integrated, work-related, work-based, work-integrated. Please select appropriate answer.	Curriculum integrated
<b>Formal contracts with company (yes/no). If yes – please indicate type of contract</b>	No Contract only between student and company.
<b>Payment of students by industry partners (yes/no, partly.)</b>	Yes In average a half employment, students are paid 14 times according to Austrian Law.
<b>Support provided by the programme</b> (i.e. service matching and career guidance)	Partly University plays a supporting role by finding internships.
<b>Please indicate how/at what stages industry partners are involved in curriculum design and review</b> (e.g. definition of functions, competences, LOs and syllabi).	Yes Development team = faculty + selected representatives of industry.
<b>Assessment:</b> <b>Student assessment by HEIs (in %)</b> <b>Student assessment by industry partners (in %)</b>	Only university (exception is the bachelor thesis)
<b>Modalities of assessment during apprenticeship periods:</b>	Standardized evaluation document
<b>Final thesis: ratio of mentors from HEIs and industry</b>	1 academic mentor + 1 in-company mentor per student
<b>Drop-out rates in the last 5 years</b> (if applicable):	No, the programme will start in October 2020.
<b>Upon completion, is there a right to continue education at</b>	Yes MSc level





Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>universities (yes/no, MA/PhD level)?</b>	
<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	No
<b>Key resource documents:</b>	Application for Accreditation
<b>Additional comments/observations:</b>	-

<b>NAME OF STUDY PROGRAMME 5:</b>	<b>Elektrotechnik Dual / Electrical Engineering Dual</b>
<b>Website link:</b>	<a href="https://www.fhv.at/studium/technik/bachelorstudiengaenge/elektrotechnik-dual-bsc/">https://www.fhv.at/studium/technik/bachelorstudiengaenge/elektrotechnik-dual-bsc/</a>
<b>Name of implementing university:</b>	FH Vorarlberg, CAMPUS V, Hochschulstraße 1, 6850 Dornbirn, Austria
<b>How is DHE defined/understood at your university?</b>	Dual Higher Education is understood here as studies with in-depth practical experience, i.e. university studies + practical phases in companies.
<b>Implementing faculty/department:</b>	Fachbereich Technik / Faculty for Engineering
<b>Joint or double degree? Yes/no – if yes, please indicate.</b>	No
<b>Please indicate the occupation of graduates from this programme (eg IT engineer, physiotherapist etc).</b>	Electrical engineers
<b>Please indicate economic sector where graduates are typically employed (eg banking, insurance, construction, health etc.).</b>	Graduates work in electronics development, automation technology, software engineering, power engineering.
<b>Degree upon completion:</b>	Bachelor of Science, BSc
<b>Education programme (EQF level):</b>	EQF level 6
<b>Type of programme (HVET, PHE, HE):</b>	HE
<b>Obligatory external accreditation of the programme: Yes/no</b>	Yes
<b>Responsible body for accreditation:</b>	Agentur für Qualitätssicherung und Akkreditierung Austria Franz-Klein-Gasse 5 • 1190 Wien
<b>Length and overall structure of the programme:</b>	6 Semesters; programme starts with a fulltime year and switches then to 3-month cycle.
<b>Entrance exam: yes/no</b>	No



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Fee: yes/no</b>	No
<b>Teaching staff from HEIs in %</b>	50%
<b>Teaching staff from industry in %</b>	50%
<b>Specific requirements for teaching staff</b> (e.g. practical experiences/managerial position in industry etc.).	Engineering diploma, Ph.D.
<b>Balance between education in institution &amp; company (in % and number of days/months)</b> e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	80% @ institution, 20% = 1 year @ company
<b>Dual approach:</b> <b>Curriculum-integrated, work-related, work-based, work-integrated.</b> Please select appropriate answer.	Curriculum-integrated (see above)
<b>Formal contracts with company (yes/no). If yes – please indicate type of contract</b>	Yes, cooperation agreement.
<b>Payment of students by industry partners (yes/no, partly..)</b>	Yes, starting with 2 <sup>nd</sup> year (= start of dual phase)
<b>Support provided by the programme</b> (i.e. service matching and career guidance)	On request.
<b>Please indicate how/at what stages industry partners are involved in curriculum design and review</b> (e.g. definition of functions, competences, LOs and syllabi).	Industry partner are involved in curriculum design, when a study programme is developed, i.e. initial launch, and then every time the programme is revised.
<b>Assessment:</b> <b>Student assessment by HEIs (in %)</b> <b>Student assessment by industry partners (in %)</b>	100% by the HEI, industry partners may make recommendations.
<b>Modalities of assessment during apprenticeship periods:</b>	Questionnaire
<b>Final thesis: ratio of mentors from HEIs and industry</b>	Students are mentored by industry and by HEI, assessment by HEI, while industry mentors may make recommendations.
<b>Drop-out rates in the last 5 years</b> (if applicable):	30%



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Upon completion, is there a right to continue education at universities (yes/no, MA/PhD level)?</b>	Students may continue, of course, but have to apply.
<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	90%, roughly.
<b>Key resource documents:</b>	
<b>Additional comments/observations:</b>	–



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

## GERMANY

<b>NAME OF STUDY PROGRAMME 1:</b>	<b>Business Administration</b>
<b>Website link:</b>	<a href="https://www.dhbw.de/english/programmes-listing.html#course-0">https://www.dhbw.de/english/programmes-listing.html#course-0</a>
<b>Name of implementing university:</b>	Baden Wuerttemberg Cooperative State University Heilbronn
<b>How is DHE defined/understood at this university?</b>	The students study alternately for three months at the DHBW and at their dual partner (employer) and thus receive integrated theoretical and practical content.
<b>Implementing faculty/department:</b>	Faculty of Business 22 Business Administration study programs in 10 locations in Baden-Wuerttemberg
<b>Joint or double degree? Yes/no – if yes, please indicate.</b>	No
<b>Please indicate the occupation of graduates from this programme (eg IT engineer, physiotherapist etc).</b>	Management positions
<b>Please indicate economic sector where graduates are typically employed (eg banking, insurance, construction, health etc.).</b>	All business sectors: industry, trade, banking, insurance, IT, service companies, consulting, etc.
<b>Degree upon completion:</b>	Bachelor of Arts (B.A.)
<b>Education programme (EQF level):</b>	6
<b>Type of programme (HVET, PHE, HE):</b>	PHE
<b>Obligatory external accreditation of the programme: Yes/no</b>	Yes In 2006, the German Central Agency for Evaluation and Accreditation (ZEvA) accredited all study programmes of the Baden-Wuerttemberg Cooperative State University. In July 2008, ZEvA validated the programmes as intensive degree programmes with 210 ECTS points. In 2011, DHBW was the first university in Baden-Wuerttemberg that obtained the system accreditation by the Central Evaluation and Accreditation Agency (ZEvA).
<b>Responsible body for accreditation:</b>	Internal system accreditation by the Central Evaluation and Accreditation Agency (ZEvA)
<b>Length and overall structure of the programme:</b>	Three years



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

	<p>The integration model combines training with the dual partner with studies at the DHBW. The curriculum is designed in a way that training and studies can overlap.</p> <p>After graduation, about 70 percent of the students remain employed by the training company, the Dual Partner.</p>
<b>Entrance exam: yes/no</b>	Depends on school-leaving certificate. If the student has a university entrance diploma, no exam is required.
<b>Fee: yes/no</b>	no
<b>Teaching staff from HEIs in %</b>	About 40
<b>Teaching staff from industry in %</b>	About 60
<b>Specific requirements for teaching staff</b> (e.g. practical experiences/managerial position in industry etc.).	Practical experience
<b>Balance between education in institution &amp; company (in % and number of days/months)</b> e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	1. - 6. Semester: Interlinking training / theoretical phase and practical phase – each semester 12 weeks theory at the university and 12 weeks practical training at the dual partner company.
<b>Dual approach:</b> <b>Curriculum-integrated, work-related, work-based, work-integrated.</b> Please select appropriate answer.	Curriculum-integrated; work-integrated
<b>Formal contracts with company (yes/no). If yes – please indicate type of contract</b>	<p>Yes – Training / study contract between the company and the student</p> <p>The company has a contract with the university which grants it the right to fill a certain number of places with dual students. The company advertises those dual study positions on job portals and selects the students. The university accepts the students that the company selected. So, it is in fact the company (and not the university) that does the selection for admission.</p>
<b>Payment of students by industry partners (yes/no, partly..)</b>	Yes
<b>Support provided by the programme</b> (i.e. service matching and career guidance)	Not relevant
<b>Please indicate how/at what stages industry partners are involved in curriculum design and</b>	Close cooperation with dual partner in the preparation and review of the curriculum.



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>review</b> (e.g. definition of functions, competences, LOs and syllabi).	
<b>Assessment:</b> <b>Student assessment by HEIs (in %)</b> <b>Student assessment by industry partners (in %)</b>	Exams at HEI 100%
<b>Modalities of assessment during apprenticeship periods:</b>	Theoretical and oral exams.
<b>Final thesis: ratio of mentors from HEIs and industry</b>	One mentor on each side, but evaluation is exclusively on the HEI side
<b>Drop-out rates in the last 5 years (if applicable):</b>	5 to 10 percent over the study period of 3 years
<b>Upon completion, is there a right to continue education at universities (yes/no, MA/PhD level)?</b>	Yes, by completing the study program 210 ECTS points are awarded. These can be recognised when applying for an MA/PhD level.
<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	According to study program and year 80 to 90 percent
<b>Key resource documents:</b>	
<b>Additional comments/observations:</b>	

<b>NAME OF STUDY PROGRAMME 2:</b>	<b>Management &amp; Business Psychology (Betriebswirtschaft &amp; Wirtschaftspsychologie)</b>
<b>Website link:</b>	<a href="https://www.fom.de/">https://www.fom.de/</a> <a href="https://www.fom.de/studiengaenge/duales-studium/bachelor-studiengaenge-betriebswirtschaftlich/betriebswirtschaft-und-wirtschaftspsychologie.html">https://www.fom.de/studiengaenge/duales-studium/bachelor-studiengaenge-betriebswirtschaftlich/betriebswirtschaft-und-wirtschaftspsychologie.html</a>
<b>Name of implementing university:</b>	FOM Hochschule für Oekonomie & Management
<b>How is DHE defined/understood at this university?</b>	This describes the concept of FOM Hochschule für Oekonomie & Management GmbH, Essen, Germany. FOM describes themselves as “the university for professionals”, meaning that students are in normal employment and study in the evenings, week-ends, and off-work times. Some students get a part of the university fees from their employer, some not. Some employers give their employees additional time for their studies, some not.



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

	It is the biggest private university in Germany with 55,000 students at 32 study centres in Germany and 1 in Vienna, Austria.
<b>Implementing faculty/department:</b>	-/-
<b>Joint or double degree? Yes/no – if yes, please indicate.</b>	No (single degree)
<b>Please indicate the occupation of graduates from this programme (eg IT engineer, physiotherapist etc).</b>	Management positions, expert positions in customers management, human resources, market research, product design, organisation, change management, etc.
<b>Please indicate economic sector where graduates are typically employed (eg banking, insurance, construction, health etc.).</b>	All economic sectors
<b>Degree upon completion:</b>	Bachelor of Science (B. Sc.)
<b>Education programme (EQF level):</b>	6
<b>Type of programme (HVET, PHE, HE):</b>	HE
<b>Obligatory external accreditation of the programme: Yes/no</b>	Yes, system accreditation (valid until 2027) plus accreditation by the Wissenschaftsrat (Council of Science and Humanities, official advisory body of the Federal and Laender governments of Germany) approved by the Land of Nordrhein-Westfalen (North Rhine-Westphalia) since 1993.
<b>Responsible body for accreditation:</b>	FIBAA
<b>Length and overall structure of the programme:</b>	7 semesters, 180 ECTS credits
<b>Entrance exam: yes/no</b>	No
<b>Fee: yes/no</b>	Yes (c. 12,390 EUR in monthly or quarterly rates)
<b>Teaching staff from HEIs in %</b>	No information available (minimum number of HEI staff following § 72 (2) no. 7 of NRW universities law: ½ (“überwiegend”))
<b>Teaching staff from industry in %</b>	No information available, but only half of teaching is provided by own Professors, the other half by external teachers from industry, freelancers, and some staff from other universities.
<b>Specific requirements for teaching staff (e.g. practical experiences/managerial position in industry etc.).</b>	For Professors: the usual requirements by law For external teachers: academic degree



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<p><b>Balance between education in institution &amp; company (in % and number of days/months)</b> e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).</p>	<p>University offers three different time models: 1) "evenings + Saturdays": a) 2 or 3 evenings per week (Mo till Fr) 18:00 – 21:15 and 2 or 3 Saturdays/Month 08:30 – 15:45 hrs b) every Friday 18:00 – 21:15 and Saturday 08:30 – 15:45 hrs 2) "evening model": 3 evenings per week (Mo till Fr) 18:00 – 21:15 hrs 3) "day studies": a) 2 days per week (Mo through Fr) normally 08:30 – 15:45 or b) 1 day per week plus Saturdays 08:30 – 15:45 o'clock There are no requirements for the practical training, most students work in a normal job (full-time or part-time).</p>
<p><b>Dual approach: Curriculum-integrated, work-related, work-based, work-integrated.</b> Please select appropriate answer.</p>	<p>Work-based</p>
<p><b>Formal contracts with company (yes/no). If yes – please indicate type of contract</b></p>	<p>No</p>
<p><b>Payment of students by industry partners (yes/no, partly..)</b></p>	<p>Yes (they are normal employees)</p>
<p><b>Support provided by the programme</b> (i.e. service matching and career guidance)</p>	<p>Mentoring programme offered by alumni some years ago, no information about ongoing programmes.</p>
<p><b>Please indicate how/at what stages industry partners are involved in curriculum design and review</b> (e.g. definition of functions, competences, LOs and syllabi).</p>	<p>No involvement, but on the level of the funding body of the university.</p>
<p><b>Assessment: Student assessment by HEIs (in %)</b> <b>Student assessment by industry partners (in %)</b></p>	<p>HEI 100 %</p>
<p><b>Modalities of assessment during apprenticeship periods:</b></p>	<p>None</p>
<p><b>Final thesis: ratio of mentors from HEIs and industry</b></p>	<p>100 % HEI</p>
<p><b>Drop-out rates in the last 5 years</b> (if applicable):</p>	<p>c. 20 % (as compared to 50 % in other business and economy study programmes, as FOM claims), including students who only change the city.</p>





Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Upon completion, is there a right to continue education at universities (yes/no, MA/PhD level)?</b>	Yes
<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	55 % of FOM graduates after c. 1.5 years receive an income of at least 4,000 EUR/month (as compared to 1/3 of graduates of other universities). C. 29 % of Bachelors and 36 % of Masters report they have budget and turnover responsibility. Nearly ¼ of graduates say they had staff reporting to them 1.5 years after finishing their studies (Masters': 31 %). Most have an employer before they start to study, so employment rates are high.
<b>Key resource documents:</b>	
<b>Additional comments/observations:</b>	This model is called "dual" but the same model is offered also without the adjective "dual". A dual partner company is not really required. Positions are offered as "vocational training", "practice-integrated" or "internship" and "traineeship". It seems to be possible to be employed anywhere in any job.

<b>NAME OF STUDY PROGRAMME 3:</b>	<b>Cooperative Study_Model – Degree Programm (Kooperatives Studienmodell – Bachelorprogramm) - Different combinations available</b>
<b>Website link:</b>	<a href="https://www.hs-heilbronn.de/kooperativ">https://www.hs-heilbronn.de/kooperativ</a>
<b>Name of implementing university:</b>	<b>Heilbronn University of Applied Sciences</b> (Hochschule Heilbronn)
<b>How is DHE defined/understood at this university?</b>	The students alternate in their studies for three months at the DHBW and at their dual partner (employer) and thus receive integrated theoretical and practical content.
<b>Implementing faculty/department:</b>	Faculties: Faculty Mechanics and Electronics (T1) Faculty Economics and Engineering (TW)
<b>Joint or double degree? Yes/no – if yes, please indicate.</b>	Yes – within 4 years 10 months, graduates of the integrated education program acquire two degrees, the Vocational Training Qualification and the Bachelor of Science (or Engineering).
<b>Please indicate the occupation of graduates from this programme</b>	Engineer in different branches or departments (Research& Development, IT, Manufacturing, Logistics, Purchasing...).



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

(eg IT engineer, physiotherapist etc).	
<b>Please indicate economic sector where graduates are typically employed</b> (eg banking, insurance, construction, health etc.).	Industry (Manufacturing Companies, Logistics Companies)
<b>Degree upon completion:</b>	Bachelor of Science (Bachelor of Engineering)
<b>Education programme (EQF level):</b>	6
<b>Type of programme (HVET, PHE, HE):</b>	PHE
<b>Obligatory external accreditation of the programme: Yes/no</b>	Yes
<b>Responsible body for accreditation:</b>	ACQUIN
<b>Length and overall structure of the programme:</b>	4 Years 10 Months: 1,5 years vocational training (dual company and professional school-special class), then start of the study program (summer semester) combined with finalisation of vocational training in the second year. Second till seventh semester follows the regular study program at University. All other periods (holidays for regular students) the dual student receives practical content at the dual company.
<b>Entrance exam: yes/no</b>	Depends on school-leaving certificate. If the student has a university entrance diploma, no exam is required.
<b>Fee: yes/no</b>	No
<b>Teaching staff from HEIs in %</b>	80%
<b>Teaching staff from industry in %</b>	20%
<b>Specific requirements for teaching staff</b> (e.g. practical experiences/managerial position in industry etc.).	Practical Experience
<b>Balance between education in institution &amp; company (in % and number of days/months)</b> e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	1,5 years vocational training: 70% Company, 30% professional school) 1– 4 Semester: 60% at University, 40 % at Company 5 Semester Company 6 – 7 Semester (50% at University, 50% in Company (or more, depends on Bachelor Thesis)
<b>Dual approach:</b> <b>Curriculum-integrated, work-related, work-based, work-integrated.</b> Please select appropriate answer.	Curriculum-integrated; work-integrated



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Formal contracts with company (yes/no). If yes – please indicate type of contract</b>	Yes – training contract
<b>Payment of students by industry partners (yes/no, partly..)</b>	Yes
<b>Support provided by the programme (i.e. service matching and career guidance)</b>	Not relevant
<b>Please indicate how/at what stages industry partners are involved in curriculum design and review (e.g. definition of functions, competences, LOs and syllabi).</b>	Close cooperation with the dual partners by developing the program (Fachbeirat and University Council).
<b>Assessment: Student assessment by HEIs (in %) Student assessment by industry partners (in %)</b>	Exams at HEI about 75% Exams at Professional School about 25%
<b>Modalities of assessment during apprenticeship periods:</b>	Theoretical, oral and practical exams. Graduation with the Chamber of Commerce and Industry (IHK).
<b>Final thesis: ratio of mentors from HEIs and industry</b>	One mentor on each side.
<b>Drop-out rates in the last 5 years (if applicable):</b>	Not documented, empirical value, less than 2%.
<b>Upon completion, is there a right to continue education at universities (yes/no, MA/PhD level)?</b>	Yes, by completing the study program 210 ECTS points are awarded. These can be recognised when applying for an MA/PhD level.
<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	Not documented on website, due to the fact, that the company is investing time and money for the education of the students: every graduate gets a job offer.
<b>Key resource documents:</b>	
<b>Additional comments/observations:</b>	

<b>NAME OF STUDY PROGRAMME 4:</b>	<b>Advanced Midwifery Science (Angewandte Hebammenwissenschaft – Hebammenkunde)</b>
<b>Website link:</b>	<a href="https://www.dhbw-stuttgart.de/themen/studienangebot/gesundheits/angewandte-hebammenwissenschaft-hebammenkunde/profil/">https://www.dhbw-stuttgart.de/themen/studienangebot/gesundheits/angewandte-hebammenwissenschaft-hebammenkunde/profil/</a>
<b>Name of implementing university:</b>	Baden Württemberg Cooperative State University Heilbronn, DHBW Stuttgart



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

	The students alternate for three months at the DHBW and at their dual partner (employer) and thus receive integrated theoretical and practical content.
<b>Implementing faculty/department:</b>	Faculty of Health
<b>Joint or double degree? Yes/no – if yes, please indicate.</b>	Yes - Within four years, graduates of the integrated training programme acquire two degrees: the state examination as midwife and the Bachelor of Science.
<b>Please indicate the occupation of graduates from this programme (eg IT engineer, physiotherapist etc).</b>	Midwife
<b>Please indicate economic sector where graduates are typically employed (eg banking, insurance, construction, health etc.).</b>	Health - Direct care of women and families in clinical and non-clinical settings, implementation of scientific projects.
<b>Degree upon completion:</b>	Bachelor of Science
<b>Education programme (EQF level):</b>	6
<b>Type of programme (HVET, PHE, HE):</b>	PHE
<b>Obligatory external accreditation of the programme: Yes/no</b>	Yes
<b>Responsible body for accreditation:</b>	Internal
<b>Length and overall structure of the programme:</b>	<p>Three years - within the framework of a four-year training to become a midwife with State Examination.</p> <p>The integration model combines training with the dual partner with studies at the DHBW Stuttgart. The curriculum is designed in a way that training and studies can overlap. Training and studies are conducted within four years, whereby the studies only begin after the first year of training. In accordance with the standard period of study, the course of study lasts three years. In the third year of study, i.e. after the training, the students remain employed by the training company, the Dual Partner. (see graphic on the page linked above).</p>
<b>Entrance exam: yes/no</b>	Depends on school-leaving certificate. If the student has a university entrance diploma, no exam is required.
<b>Fee: yes/no</b>	No
<b>Teaching staff from HEIs in %</b>	About 40



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Teaching staff from industry in %</b>	About 60
<b>Specific requirements for teaching staff</b> (e.g. practical experiences/managerial position in industry etc.).	Practical experience
<b>Balance between education in institution &amp; company (in % and number of days/months)</b> e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	1., 2., 3. Semester: Interlinking training / theoretical phase and practical phase - 12 weeks; 4. Semester: Interlinking training / theoretical phase and practical phase – 20 weeks. 5. Semester theory 21.11.2022 – 12.02.2023, practical phase 13.02.2023 – 07.05.2023 – 12 weeks; 6. Semester Theory 08.05.2023 – 30.07.2023, practical phase: 31.07.2023 – 30.09.2023 – 9 weeks.
<b>Dual approach:</b> <b>Curriculum-integrated, work-related, work-based, work-integrated.</b> Please select appropriate answer.	Curriculum-integrated; work-integrated
<b>Formal contracts with company (yes/no). If yes – please indicate type of contract</b>	Yes - Training contract
<b>Payment of students by industry partners (yes/no, partly..)</b>	Yes
<b>Support provided by the programme</b> (i.e. service matching and career guidance)	Not relevant
<b>Please indicate how/at what stages industry partners are involved in curriculum design and review</b> (e.g. definition of functions, competences, LOs and syllabi).	Close cooperation with the midwifery school/dual partner in the preparation of the curriculum. Joint modules together with the midwifery school.
<b>Assessment:</b> <b>Student assessment by HEIs (in %)</b> <b>Student assessment by industry partners (in %)</b>	Exams at HEI about 70%  Exams at midwifery school about 30%
<b>Modalities of assessment during apprenticeship periods:</b>	Theoretical, oral and practical exams. Graduation with the state examination
<b>Final thesis: ratio of mentors from HEIs and industry</b>	One mentor on each side, but evaluation is exclusively on the HEI side
<b>Drop-out rates in the last 5 years</b> (if applicable):	The study programme has been implemented in 2018, therefore no data is available yet.



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Upon completion, is there a right to continue education at universities (yes/no, MA/PhD level)?</b>	Yes, by completing the study program 210 ECTS points are awarded. These can be recognised when applying for an MA/PhD level.
<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	Due to the glaring lack of midwives in Germany, a high takeover rate is expected.
<b>Key resource documents:</b>	
<b>Additional comments/observations:</b>	

<b>NAME OF STUDY PROGRAMME 5:</b>	<b>Mechatronics (as an example)</b>
<b>Website link:</b>	<a href="https://www.thi.de/en/electrical-engineering-and-information-technology/degree-programmes/mechatronics-beng">https://www.thi.de/en/electrical-engineering-and-information-technology/degree-programmes/mechatronics-beng</a>
<b>Name of implementing university:</b>	Technische Hochschule Ingolstadt THI, Ingolstadt, Germany
<b>How is DHE defined/understood at your university?</b>	This describes not our concept, but that of the universities of the Free State of Bavaria. In Bavaria public universities (of applied sciences) combine their study programmes with formal vocational education. There is a land-wide network called "Hochschule Bayern e. V." ( <a href="https://www.hochschule-dual.de">https://www.hochschule-dual.de</a> ) with 21 member universities. As an example of many different programmes, one of the Technical University of Ingolstadt has been chosen.
<b>Implementing faculty/department:</b>	Electrical Engineering and Information Technology
<b>Joint or double degree? Yes/no – if yes, please indicate.</b>	Yes Bachelor (B. Sc.) combined with Chamber Certificate in state-recognised occupation (Zeugnis über die Prüfung im Ausbildungsberuf)
<b>Please indicate the occupation of graduates from this programme (eg IT engineer, physiotherapist etc).</b>	Engineer in mechatronics in development or high-tech production, e. g. in automotive industry.
<b>Please indicate economic sector where graduates are typically employed (eg banking, insurance, construction, health etc.).</b>	Industry, engineering.
<b>Degree upon completion:</b>	Bachelor of Science (B. Sc.) and "journeyman's certificate for the electrical trade" by the Chamber of Craft Trade (Gesellenbrief der Handwerkskammer für München und Oberbayern)
<b>Education programme (EQF level):</b>	6 including 4



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Type of programme (HVET, PHE, HE):</b>	HE combined with vocational training
<b>Obligatory external accreditation of the programme: Yes/no</b>	Yes
<b>Responsible body for accreditation:</b>	ASIIN e. V. (Accreditation Agency for Study Programmes in Engineering, Information Science, Sciences and Mathematics, a body founded by universities and professional associations)
<b>Length and overall structure of the programme:</b>	7 semesters
<b>Entrance exam: yes/no</b>	No, but “numerus clauses” (a certain mark required) and a six weeks pre-study internship.
<b>Fee: yes/no</b>	No (state university)
<b>Teaching staff from HEIs in %</b>	n/a
<b>Teaching staff from industry in %</b>	n/a (industry is responsible for practical training)
<b>Specific requirements for teaching staff (e.g. practical experiences/managerial position in industry etc.).</b>	n/a
<b>Balance between education in institution &amp; company (in % and number of days/months)</b> e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	There is a 13 months phase in the industry at the beginning. This ends with the mid-time exam of the Chamber of Craft Trade. Then the time at workplace is limited to 1 month after every semester of 4.5 months duration, except for the 5 <sup>th</sup> semester, which, like in most university of applied sciences study programmes, takes place in industry only. After the 5 <sup>th</sup> semester, the exam of the Chamber of Craft Trade takes place. (See picture at the end of the table.)
<b>Dual approach: Curriculum-integrated, work-related, work-based, work-integrated.</b> Please select appropriate answer.	Work-based
<b>Formal contracts with company (yes/no). If yes – please indicate type of contract</b>	Yes
<b>Payment of students by industry partners (yes/no, partly..)</b>	Yes
<b>Support provided by the programme (i.e. service matching and career guidance)</b>	Service matching and career service “hochschule dual” offers a Bavaria-wide matching service.
<b>Please indicate how/at what stages industry partners are involved in curriculum design and</b>	No information available, probably only on informal level regarding university programmes.





Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>review</b> (e.g. definition of functions, competences, LOs and syllabi).	
<b>Assessment:</b> <b>Student assessment by HEIs (in %)</b> <b>Student assessment by industry partners (in %)</b>	HEI 100 % of academic assessment for B. Sc. Industry: no assessment
<b>Modalities of assessment during apprenticeship periods:</b>	Chamber of Craft Trade: mid-time and final exam Industry: practitioners serve as examiners on behalf of the Chamber
<b>Final thesis: ratio of mentors from HEIs and industry</b>	1:1 (recommended)
<b>Drop-out rates in the last 5 years (if applicable):</b>	n/a
<b>Upon completion, is there a right to continue education at universities (yes/no, MA/PhD level)?</b>	Yes, M. Sc.
<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	No
<b>Key resource documents:</b>	
<b>Additional comments/observations:</b>	



Beispielhaftes Ablaufschema

*Abschlussprüfung Ausbildung = final exam of vocational education*

*Bachelorarbeit = Bachelor Thesis*

Description, but without picture, in English: <https://www.thi.de/en/studies/degree-programmes/dual-studies/dual-study-models-at-the-thi>





Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

**SPAIN**

<b>NAME OF STUDY PROGRAMME 1:</b>	<b>Degree in Automotive Engineering</b>
<b>Website link:</b>	<a href="https://www.ehu.eus/es/grado-ingenieria-automocion">https://www.ehu.eus/es/grado-ingenieria-automocion</a>
<b>Name of implementing university:</b>	University of the Basque Country (UPV/EHU)
	<p>The University of the Basque Country has identified the need to innovate the teaching-learning process of students to improve the inclusion of graduate students in the socio-economic environment.</p> <p>The goal of the dual system is to integrate the acquisition of skills in the company with those acquired at the University. In this way, companies actively participate in the design of the competency profile of the students who will be trained following the dual model and thus meet the needs of companies.</p> <p>The dual model allows students a greater knowledge of the reality of the company with which they have formalized an internship contract and facilitates their subsequent insertion in the labour market.</p>
<b>Implementing faculty/department:</b>	Faculty of Engineering Vitoria-Gasteiz
<b>Joint or double degree? Yes/no – if yes, please indicate.</b>	No
<b>Please indicate the occupation of graduates from this programme (eg IT engineer, physiotherapist etc).</b>	Automotive engineer
<b>Please indicate economic sector where graduates are typically employed (eg banking, insurance, construction, health etc.).</b>	Automotive industry
<b>Degree upon completion:</b>	Degree in Automotive Engineering
<b>Education programme (EQF level):</b>	Level 6 of the European Qualifications Framework (EQF)
<b>Type of programme (HVET, PHE, HE):</b>	HE
<b>Obligatory external accreditation of the programme: Yes/no</b>	Yes
<b>Responsible body for accreditation:</b>	The National Agency for Quality Assessment and Accreditation of Spain, (ANECA)
<b>Length and overall structure of the programme:</b>	4 courses; Number of credits: 240 ECTS credits, 60 ECTS/year; 42 ECTS Internship stay in companies



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Entrance exam: yes/no</b>	No (Cut-off note: 10,21 in ordinary call (2019/20))
<b>Fee: yes/no</b>	Yes (Price per credit in 1st registration € 19.19)
<b>Teaching staff from HEIs in %</b>	77,5% (HEIs)
<b>Teaching staff from industry in %</b>	22, 5% (Industry partners)
<b>Specific requirements for teaching staff</b> (e.g. practical experiences/managerial position in industry etc.).	University teacher
<b>Balance between education in institution &amp; company (in % and number of days/months)</b> e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	During the last two courses, students spend 3 days (Monday, Tuesday and Wednesday) at the company, and 2 days (Thursday and Friday) at the educational institution.
<b>Dual approach:</b> Curriculum-integrated, work-related, work-based, work-integrated. Please select appropriate answer.	Curriculum-integrated
<b>Formal contracts with company (yes/no). If yes – please indicate type of contract</b>	Yes. The participating companies establish two types of agreements. The first agreement is generic, has a duration of 4 years and is established to collaborate with the Faculty of Engineering. The second agreement is particular for each student doing the internship and has a duration of one year. It establishes the training plan to be developed by the student in the company advised by a company instructor and a tutor from the Faculty of Engineering Vitoria-Gasteiz.
<b>Payment of students by industry partners (yes/no, partly..)</b>	Yes. The second agreement also includes a section dedicated to the financial aid that the student will receive.
<b>Support provided by the programme</b> (i.e. service matching and career guidance)	The Faculty has a service to facilitate voluntary (extracurricular) internship in companies. These internships facilitate the connection of the student and the company in non-academic periods
<b>Please indicate how/at what stages industry partners are involved in curriculum design and review</b> (e.g. definition of functions, competences, LOs and syllabi).	The industry partners have been involved in design of the curriculum through meetings held with them.
<b>Assessment:</b> <b>Student assessment by HEIs (in %)</b>	85% (HEIs) 15% (Industry partners)



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Student assessment by industry partners (in %)</b>	
<b>Modalities of assessment during apprenticeship periods:</b>	The company's instructor evaluates the degree of development of the aspects included in the student's Professional Development Plan. An evaluation rubric is used.
<b>Final thesis: ratio of mentors from HEIs and industry</b>	50%. Each final thesis work is assigned a tutor from the university and an instructor from the company
<b>Drop-out rates in the last 5 years (if applicable):</b>	Not applicable.
<b>Upon completion, is there a right to continue education at universities (yes/no, MA/PhD level)?</b>	Yes. After completing the degree, the student can complete their training with a master's degree. The UPV / EHU offers an extensive set of masters.
<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	No data available. The first promotion will be finished in June 2021.
<b>Key resource documents:</b>	Verification, monitoring and accreditation of Study Programme. <a href="https://www.ehu.eus/es/grado-ingenieria-automocion/verificacion-seguimiento-y-acreditacion">https://www.ehu.eus/es/grado-ingenieria-automocion/verificacion-seguimiento-y-acreditacion</a>
<b>Additional comments/observations:</b>	

<b>NAME OF STUDY PROGRAMME 2:</b>	<b>Master in Digital Manufacturing</b>
<b>Website link:</b>	<a href="https://www.imh.eus/es/ingenieria-dual/master-industria-4-0">https://www.imh.eus/es/ingenieria-dual/master-industria-4-0</a>
<b>Name of implementing university:</b>	Dual Engineering University School
<b>How is DHE defined/understood at your university?</b>	DHE is an educational model that combines the education received at the University and the work carried out in the company. In our case, the objective is to train engineers and learning occurs in two equivalent environments in a parallel and coordinated way (the academic - university; the professional - company). The company participates in the educational process and the student learns both in the company and at university. For this, from the beginning, the professional profile of the students is designed in collaboration with the company, since planning and coordination between the two fields is necessary for the development of the student's skills. This connection of the educational process and professional development in the company allows the development of the student's competences, a development adapted to the world of work.



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Implementing faculty/department:</b>	Idem
<b>Joint or double degree? Yes/no – if yes, please indicate.</b>	No
<b>Please indicate the occupation of graduates from this programme</b> (eg IT engineer, physiotherapist etc).	Engineer
<b>Please indicate economic sector where graduates are typically employed</b> (eg banking, insurance, construction, health etc.).	Advanced manufacturing, machine-tool, automotive, aeronautic
<b>Degree upon completion:</b>	Master Degree
<b>Education programme (EQF level):</b>	Level 7 of the European Qualifications Framework (EQF)
<b>Type of programme (HVET, PHE, HE):</b>	University Higher Education
<b>Obligatory external accreditation of the programme: Yes/no</b>	Yes
<b>Responsible body for accreditation:</b>	Agency for Quality of the Basque University System Accreditation of Spain, (UNIBASQ)
<b>Length and overall structure of the programme:</b>	2 courses; Number of credits: 90 ECTS credits, 60 ECTS/first year, 30 ECTS/second year; 29 ECTS Internship stay in companies
<b>Entrance exam: yes/no</b>	Yes
<b>Fee: yes/no</b>	Yes
<b>Teaching staff from HEIs in %</b>	No percentages set / can be %100
<b>Teaching staff from industry in %</b>	No percentages set / can be %0
<b>Specific requirements for teaching staff</b> (e.g. practical experiences/managerial position in industry etc.).	No
<b>Balance between education in institution &amp; company (in % and number of days/months)</b> e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	Approximately 6 days per month at the university (eight hours per day). The rest in the company
<b>Dual approach:</b> <b>Curriculum-integrated, work-related, work-based, work-integrated.</b> Please select appropriate answer.	Work-integrated, curriculum-integrated



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Formal contracts with company (yes/no). If yes – please indicate type of contract</b>	Yes. Employment contract or university-company collaboration agreement. In Spain, at university level, there is no specific employment contract for Dual education. At VET level, yes. In addition to the previous one, a collaboration agreement is also signed between the university, the company and the student, which defines the rights and obligations of all of them.
<b>Payment of students by industry partners (yes/no, partly..)</b>	Yes
<b>Support provided by the programme (i.e service matching and career guidance)</b>	Yes Double tutoring Searching companies and the organization of the monitoring process, tutoring,... is the responsibility of the university.
<b>Please indicate how/at what stages industry partners are involved in curriculum design and review (e.g. definition of functions, competences, LOs and syllabi).</b>	They participated in the design of the Master programme, and each year they participate in the definition of the skills and competences to be developed in the company by dual students.
<b>Assessment: Student assessment by HEIs (in %) Student assessment by industry partners (in %)</b>	70% (HEI) 30% (Industry partners)
<b>Modalities of assessment during apprenticeship periods:</b>	Activities done, Learning Notebook, competencies, project development.
<b>Final thesis: ratio of mentors from HEIs and industry</b>	50%. Each final thesis work is assigned a tutor from the university and an instructor from the company
<b>Drop-out rates in the last 5 years (if applicable):</b>	-----
<b>Upon completion, is there a right to continue education at universities (yes/no, MA/PhD level)?</b>	Yes. PhD
<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	No data available. The first promotion will be finished in July 2020
<b>Key resource documents:</b>	All information and documentation is at the web address provided
<b>Additional comments/observations:</b>	



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>NAME OF STUDY PROGRAMME 3:</b>	<b>Degree Primary Education</b>
<b>Website link:</b>	<a href="http://www.educacionprimaria.udl.cat/en/pla-formatiu/alternanca.html">http://www.educacionprimaria.udl.cat/en/pla-formatiu/alternanca.html</a>
<b>Name of implementing university:</b>	University of Lleida
<b>How is DHE defined/understood at your university?</b>	--
<b>Implementing faculty/department:</b>	Faculty of Education, Psychology and Social Work
<b>Joint or double degree? Yes/no – if yes, please indicate.</b>	No
<b>Please indicate the occupation of graduates from this programme (eg IT engineer, physiotherapist etc).</b>	Teacher of primary education
<b>Please indicate economic sector where graduates are typically employed (eg banking, insurance, construction, health etc.).</b>	Education
<b>Degree upon completion:</b>	Bachelor
<b>Education programme (EQF level):</b>	6
<b>Type of programme (HVET, PHE, HE):</b>	HE
<b>Obligatory external accreditation of the programme: Yes/no</b>	Yes
<b>Responsible body for accreditation:</b>	Catalan University Quality Assurance Agency. <a href="http://www.aqu.cat/index_en.html">http://www.aqu.cat/index_en.html</a>
<b>Length and overall structure of the programme:</b>	4 years. 240 ECTS
<b>Entrance exam: yes/no</b>	No
<b>Fee: yes/no</b>	Yes
<b>Teaching staff from HEIs in %</b>	
<b>Teaching staff from industry in %</b>	20%
<b>Specific requirements for teaching staff (e.g. practical experiences/managerial position in industry etc.).</b>	No
<b>Balance between education in institution &amp; company (in % and number of days/months)</b> e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	2 days at School (“company”), 3 days at university , each week, during first 3 year of study program. 4th year, they are longer periods at schools (“company”).
<b>Dual approach:</b>	Work-related



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Curriculum-integrated, work-related, work-based, work-integrated.</b> Please select appropriate answer.	
<b>Formal contracts with company (yes/no). If yes – please indicate type of contract</b>	No. There is a global agreement with the regional government, and a specific agreement for each student.
<b>Payment of students by industry partners (yes/no, partly..)</b>	No
<b>Support provided by the programme</b> (i.e. service matching and career guidance)	Double tutoring. One tutor at the university and one from school
<b>Please indicate how/at what stages industry partners are involved in curriculum design and review</b> (e.g. definition of functions, competences, LOs and syllabi).	The responsible persons of the regional education Department haven been involved in the design of the educational program. They are also involved in the development of the program and helping schools to integrate the students at schools.
<b>Assessment:</b> <b>Student assessment by HEIs (in %)</b> <b>Student assessment by industry partners (in %)</b>	85% 15%
<b>Modalities of assessment during apprenticeship periods:</b>	Observation; practical experiences; knowledge; ...
<b>Final thesis: ratio of mentors from HEIs and industry</b>	No
<b>Drop-out rates in the last 5 years</b> (if applicable):	4%
<b>Upon completion, is there a right to continue education at universities (yes/no, MA/PhD level)?</b>	Yes. Master and PhD
<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	No
<b>Key resource documents:</b>	Available at <a href="http://www.educacionprimaria.udl.cat/en/pla-formatiu/alternanca.html">http://www.educacionprimaria.udl.cat/en/pla-formatiu/alternanca.html</a>
<b>Additional comments/observations:</b>	





Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>NAME OF STUDY PROGRAMME 4:</b>	<b>Master Degree in Informatics Engineering</b>
<b>Website link:</b>	<a href="http://www.masterinformatica.udl.cat/en/pla-formatiu/FormacioDual/Formacio-Dual.html">http://www.masterinformatica.udl.cat/en/pla-formatiu/FormacioDual/Formacio-Dual.html</a>
<b>Name of implementing university:</b>	University of Lleida
<b>How is DHE defined/understood at your university?</b>	----
<b>Implementing faculty/department:</b>	Polytechnic School.
<b>Joint or double degree? Yes/no – if yes, please indicate.</b>	No
<b>Please indicate the occupation of graduates from this programme (eg IT engineer, physiotherapist etc).</b>	IT engineer
<b>Please indicate economic sector where graduates are typically employed (eg banking, insurance, construction, health etc.).</b>	Technology. Software development.
<b>Degree upon completion:</b>	Master
<b>Education programme (EQF level):</b>	7
<b>Type of programme (HVET, PHE, HE):</b>	HE
<b>Obligatory external accreditation of the programme: Yes/no</b>	Yes
<b>Responsible body for accreditation:</b>	Catalan University Quality Assurance Agency . <a href="http://www.aqu.cat/index_en.html">http://www.aqu.cat/index_en.html</a>
<b>Length and overall structure of the programme:</b>	3 semester. 90 ECTS There are compulsory courses that must be taken and the university. These are 54 out of the 90 ECTS. Work in company, are 24 ECTS There is a final thesis that is 12 ECTS. Usually part of the work in company.
<b>Entrance exam: yes/no</b>	No
<b>Fee: yes/no</b>	Yes
<b>Teaching staff from HEIs in %</b>	70%
<b>Teaching staff from industry in %</b>	30%
<b>Specific requirements for teaching staff (e.g. practical experiences/managerial position in industry etc.).</b>	Practical experience and academic degree equal or higher than the pursued by the student.
<b>Balance between education in institution &amp; company (in % and number of days/months)</b>	First and second semester, mornings company, afternoon university. Third semester, company.





Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	
<b>Dual approach:</b> <b>Curriculum-integrated, work-related, work-based, work-integrated.</b> Please select appropriate answer.	Work-integrated, work-based.
<b>Formal contracts with company (yes/no). If yes – please indicate type of contract</b>	Yes. Work contract.
<b>Payment of students by industry partners (yes/no, partly..)</b>	Yes
<b>Support provided by the programme</b> (i.e. service matching and career guidance)	Double tutoring. One tutor at the university and one from school.
<b>Please indicate how/at what stages industry partners are involved in curriculum design and review</b> (e.g. definition of functions, competences, LOs and syllabi).	Companies participate through the company tutor and together with the university tutor in the establishment of the work plan and determination of the competencies, achievements and assessing process.
<b>Assessment:</b> <b>Student assessment by HEIs (in %)</b> <b>Student assessment by industry partners (in %)</b>	The compulsory 54 ECTS are assessed by HEIs. The work in company is assessed by the academic tutor together with the company tutor
<b>Modalities of assessment during apprenticeship periods:</b>	Learning Notebook, activities done, competencies, skills and degree of acquisition
<b>Final thesis: ratio of mentors from HEIs and industry</b>	50%-50%
<b>Drop-out rates in the last 5 years</b> (if applicable):	14%
<b>Upon completion, is there a right to continue education at universities (yes/no, MA/PhD level)?</b>	Yes. PhD
<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	No. Annual Survey from the University Quality Agency (AQU).
<b>Key resource documents:</b>	Available at <a href="http://www.masterinformatica.udl.cat/en/pla-formatiu/FormacioDual/Formacio-Dual.html">http://www.masterinformatica.udl.cat/en/pla-formatiu/FormacioDual/Formacio-Dual.html</a>
<b>Additional comments/observations:</b>	



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>NAME OF STUDY PROGRAMME 5:</b>	<b>Degree in Process and Product Innovation Engineering</b>
<b>Website link:</b>	<a href="https://www.imh.eus/es/ingenieria-dual/grado-dual">https://www.imh.eus/es/ingenieria-dual/grado-dual</a>
<b>Name of implementing university:</b>	Dual Engineering University School
<b>How is DHE defined/understood at your university?</b>	DHE is an educational model that combines the education received at the University and the work carried out in the company. In our case, the objective is to train engineers and for this purpose, learning occurs in two equivalent environments in a parallel and coordinated way (the academic - university; the professional - company). The company participates in the educational process and the student learns both in the company and at university. For this, from the beginning, the professional profile of the students is designed in collaboration with the company, since planning and coordination between the two fields is necessary for the development of the student's skills. This connection of the educational process and professional development in the company allows the development of the student's competences, a development adapted to the world of work.
<b>Implementing faculty/department:</b>	Idem
<b>Joint or double degree? Yes/no – if yes, please indicate.</b>	No
<b>Please indicate the occupation of graduates from this programme (eg IT engineer, physiotherapist etc).</b>	Engineer
<b>Please indicate economic sector where graduates are typically employed (eg banking, insurance, construction, health etc.).</b>	Advanced manufacturing, machine-tool, automotive, aeronautic
<b>Degree upon completion:</b>	Bachelor Degree
<b>Education programme (EQF level):</b>	Level 6 of the European Qualifications Framework (EQF)
<b>Type of programme (HVET, PHE, HE):</b>	University Higher Education
<b>Obligatory external accreditation of the programme: Yes/no</b>	Yes
<b>Responsible body for accreditation:</b>	Agency for Quality of the Basque University System Accreditation of Spain, (UNIBASQ)
<b>Length and overall structure of the programme:</b>	4 courses; Number of credits: 240 ECTS credits, 60 ECTS/year; 66 ECTS Internship stay in companies
<b>Entrance exam: yes/no</b>	Yes
<b>Fee: yes/no</b>	Yes
<b>Teaching staff from HEIs in %</b>	No percentages set / can be %100



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

<b>Teaching staff from industry in %</b>	No percentages set / can be %0
<b>Specific requirements for teaching staff</b> (e.g. practical experiences/managerial position in industry etc.).	No
<b>Balance between education in institution &amp; company (in % and number of days/months)</b> e.g. 6 months in company or 1 day at institution and 4 days a week in company etc.).	First semester at the university. From the second semester 3 days per week in the company, and two days in the university; except one week per month which is 2 days in the company and 3 days in the university.
<b>Dual approach:</b> <b>Curriculum-integrated, work-related, work-based, work-integrated.</b> Please select appropriate answer.	Work-integrated, curriculum-integrated.
<b>Formal contracts with company (yes/no). If yes – please indicate type of contract</b>	Yes. Employment contract or university-company collaboration agreement. In Spain, at university level, there is no specific employment contract for Dual education. At VET level, yes. In addition to the above, a collaboration agreement is also signed between the university, the company and the student, which defines the rights and obligation of all of them.
<b>Payment of students by industry partners (yes/no, partly..)</b>	Yes
<b>Support provided by the programme</b> (i.e service matching and career guidance)	Yes. Double tutoring Searching companies and the organization of the monitoring process, tutoring etc is the responsibility of the university.
<b>Please indicate how/at what stages industry partners are involved in curriculum design and review</b> (e.g. definition of functions, competences, LOs and syllabi).	They participated in the design of the degree, and each year they participate in the definition of the skills and competences to be developed in the company by dual student.
<b>Assessment:</b> <b>Student assessment by HEIs (in %)</b> <b>Student assessment by industry partners (in %)</b>	50%. Each final thesis work is assigned a tutor from the university and an instructor from the company.
<b>Modalities of assessment during apprenticeship periods:</b>	Every six months the competencies to be developed and the objectives and indicators associated with them are defined,



Strengthening capacities for the implementation of dual education in BH higher education  
(DUALSCI)

	<p>which are evaluated by the company and presented in a joint meeting (Company, university, student). On the other hand, the students develop two pieces of work. They have to present these in two reports that are evaluated by the company tutor and the university; two projects are developed (one of them as the final degree project) that are defended in a jury; surveillance work is done and it is presented publicly. There is also a stay abroad that is evaluated by the tutor of the foreign company and a public presentation is made in English.</p>
<b>Final thesis: ratio of mentors from HEIs and industry</b>	HEIs %66 – Industry %33
<b>Drop-out rates in the last 5 years (if applicable):</b>	12/13-%28, 13/14-%36, 14/15-%20
<b>Upon completion, is there a right to continue education at universities (yes/no, MA/PhD level)?</b>	Yes. Master Degree.
<b>Are data available regarding the employment rates of graduates? If so, please indicate.</b>	15/16-%86, 16/17-%100, 17/18-%84, 18/19-%84 (at the end of the degree)
<b>Key resource documents:</b>	All information and documentation is provided at the web address.
<b>Additional comments/observations:</b>	