DIGI4ME

REPORT ON VET CURRICULA GUIDELINES

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V1.0

HEALTH SECTOR SKILL ALLIANCE FOR CREATING INNOVATIVE AND EFFICIENT VET PROGRAMMES AND IMPROVING THE DIGITAL SKILLS OF MEDICAL PHYSICS AND HEALTH PROFESSIONALS

WP2 - SPECIFICATION AND ANALYSIS OF CURRENT POLICIES AND DIGITAL SKILLS NEEDS IN HEATH.

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DIGI4ME PROJECT

"Health sector skill alliance for creating innovative and efficient VET programmes and improving the digital Skills of medical physics and health professionals"

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O2.2 Report on VET Curricula Guidelines

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Abstract:	The report will present the results of the research in the four partner countries as well the wider EU setting. Specifications and characteristics of the VET programs available in the partners' countries and on EU level. Analysis of the outcomes and presentation of the main findings regarding the topics and the content covered in the programs in each country and on EU level. The result aims to summarize findings from digital competencies in existing VET programs in the Partners Countries and EU and specify main categories for the development of curriculum.
Keyword List:	Digital Skills, Health sector, VET, VET programmes

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BACKGROUND

Digi4ME

Digi4ME will enhance digital skills training in the health care sector as well as educational institutes, VET centres, health care associations and research institutes. The project will promote exchange of skills, experience and accessibility which will be embodied in a single high quality training framework to improve Digital Skill training all over Europe. The increasing demand for healthcare services, driven by the demographic shifts throughout Europe (Maresso et al., 2015), will increase the number of jobs and the required skills of professionals in the health sector. The increasing demand to recruit healthcare workers (Liu et al., 2017) can be explained by several factors such as the increase of world population and ageing populations that need long term healthcare services (Schulz et al., 2014, Bayar et al., 2021). The health sector is expected to have a 23% increase in employment by 2025 while over time new medical technologies are evolving and the skills that health professionals possess are a key determinant in the delivery of high-quality services to wider society. The quality and competency of digital skills of healthcare professionals are acknowledged to be of extreme importance at EU level.

The project will identify and define the educational content by determining the digital skills that every health professional must possess to use eHealth solutions effectively. This process will involve verification of the specific educational needs of doctors, operators and other professionals of digital technology of medical imaging equipment. Then partners of the project will develop user-adapted training modules on the specific context concerning digital image processing and administration, including recent changes to the pedagogical landscape of healthcare distance learning with the use of an innovative Vocational Open Online Courses (VOOCs) for Digital Skills. This will be performed after an evaluation of the functionality of the educational tools through the pilot study over 4 EU countries. After testing the VOOCs, the educational framework will be accredited using the appropriate EU directives and national agencies.

Work Package 2 (WP2)

WP2 will identify training needs and digital skills for health sector and industry across Europe.

O2.2 Guideline of digital Skills for VET Student in health

Specifications and characteristics of the VET programs available in the partners' countries and on EU level. Analysis of the outcomes and presentation of the main findings regarding the topics and the content covered in the programs in each country and on EU level. Competitions will be performed with available reports conducted on USA and Asian level.

VET programs in Greece

IEK (Greek: IEK) is a Greek abbreviation name for the Ινστιτούτο Επαγγελματικής Κατάρτισης (Institute of Vocational Training).[1][2][3][4]

IEK was established in 1992[5] as a type of educational institution specifically to provide adult vocational education and training (VET) at the post-secondary education level considered to be a body of "non-formal education". With the law 4763/2020 Government Gazette 254/A/21-12-2020[6][7] the IEK belongs to "formal education" and IEK graduates having Diploma of Vocational Education and Training at HQF level 5, after successful specific entrance examinations (κατατακτήριες εξετάσεις), allows to them admission into the higher education to an undergraduate programme relevant to their IEK programme specialty.[8][9][10] The IEK does not require entrance examinations for admission to its programmes.[11][12][13][14] IEK name variants include Post–Secondary Institute of Vocational Education and Training (PSIVET), Institute of Vocational Education and Training (IVET), Institute of Professional Studies (IPS).[15][16][17][18][19][20][21]

Public and private IEK

Public and private IEK offer postsecondary courses accredited by Ministry of Education and the agency of EOPPEP - National Organization for the Certification of Qualifications and Vocational Guidance.

There are approx. 90 regional Public IEK (Greek: ΔΙΕΚ) in the administrative regions of Greece, and also over 50 Private IEK administrated by EOPPEP entity, recognized by the Ministry of Education. Additionally, they also exist public IEKs of Ministry of Tourism [22] at which has hospitality and tourism specialties; of National Center for Emergency Care (EKAV, Greek: Ε.Κ.Α.Β.); [23] of Ministry of Health;[24] of Workforce Employment Organisation (OAED, Greek: Ο.Α.Ε.Δ.). Generally, public IEK operates afternoon starting by 15:00 pm in which its lecture classes are usually co-housed at a day secondary education school's building, while the laboratory classes conducted off-school at laboratories owned and sponsored by individual companies loaning to the IEK, however, laboratories are offered to the IEK by priority order subject to change depending on availability. Either private or public IEK is on a two terms (semesters) system per academic calendar year has the national curriculum (national education system) set forth by the Ministry of Education of Greece. IEK students are being assessed during the semester in the form of progress test and the final examination test taken and the end of the semester. In prior years the Institute of Vocational Training (IEK) was also offered the IEK post lower secondary programmes that have been discontinued (repealed),[2][5] where access to this type of programmes had the students that have completed the gymnasium school.

Admission

Admission into an IEK's programme requires adult-only applicants who have graduated from upper secondary education school in Greece[1][25][26][27][28][29][30][31][32] at National Qualification Framework (NQF) of Greece Level 4 (EQF 4; lyceum) or its international equivalent officially recognized by the Greek Ministry of Education.

Admission into a public IEK's programme is selective, subject to fulfilling the entry criteria. It has to be granted on the basis of the senior secondary leaving certificate grade and other criteria include age,

the social insurance stamps of applicants having prior employment relevant to the subject of the study applied for, and specific criteria on an individual basis will be assessed. All public IEKs are government-funded have free education, without any payment of tuition fee. Prescribed textbooks and some required materials are not provided by the public IEKs, and thus students (enrollees) will have to be purchased at their own cost, subject to the chosen specialty. The VAT number (ΑΦΜ, registration code for tax purposes) and SSRN (AMKA, Social Security Registration Number) are required from the student for its admission. Since its foundation in 1992, public IEKs were required by law from their students to pay up to €367 statutory tuition each semester until the 2012-2013 academic year, but has been repealed since the 2013-2014 academic year by Law 4186/2013, Chapter IV, Article 23(2), Government Gazette 193/A/17-9-2013.[1] Admission into a private IEK's programme is non-selective, meaning does not select its intake on the basis of academic achievement having an open enrollment for those who have graduated from senior secondary school without further admission requirements, since all most private IEKs they are for-profit IEKs financed primarily through tuition fees received from students.

Practical Training

As part of IEK curriculum, hence also being known as curricular practicum or 5th semester, IEK student must be complete a work placement.[33][25][34][35][36][37][38][39] [40] The work placement is a paid contract CDD compulsory by law at an employment position. It can be an Internship (πρακτική) 960 hours workplace's work practice training considered upon 4th semester graduation or during 3rd or 4th semester; or it can be an Apprenticeship : 192 hours Apprenticeship at IEK school (classes) 1 day per week with 8 hours per day and 768 hours Apprenticeship at a Work Placement 4 days per week with 8 hours per day considered upon 4th semester graduation,[33] unless otherwise is stated from the apprenticeship programme of study also known as Dual VET two-track education system .The practical training, either internship or apprenticeship, can only be taken until the twenty four (24) months time limit since the IEK specialty fourth semester graduation.

However, the IEK programmes can also be offered with a shorter duration including 1200 hours at IEK school (classes) only for those students who having already obtained at least 120 social insurance stamps from working in employment corresponding to their IEK specialty, meaning it can to choose the right for exemption from a practical training.[35] Public IEK school is not responsible for finding internships for its students, and it is determined individually by each public IEK student to find.

According to the regulation amendment for the Institute of Vocational Training (IEK) operation by the Ministry of Education, Article 3(B)[33] of the Ministerial Decision K1/54877 Government Gazette 1245/B/11-4-2017, a IEK specialty can operate an IEK Apprenticeship programme (scheme) when has intake at least ten IEK students of specialty related to the apprenticeship and after an approval decision taken by the General Secretariat for Vocational Education, Training, Life-long Learning and Youth (GGEEKDBM&N). In the event that a number of student candidates from a public IEK specialty are greater than the available apprenticeship student positions offered, students being admitted based on Grade Point Average (GPA) of their marks earned in the public IEK third and fourth semester. The maximum number of students that can register in a given IEK Apprenticeship programme is up to thirty (30). Students must be off-term employment at the time of the apprenticeship enrollment and throughout the time period during which the apprenticeship is being carried out.

Qualifications and accreditation

The Certificate of Vocational Training signifies completion of four semesters of full-time post-secondary vocational education and training (VET) programme of 1200 hours at IEK classes and 960 hours from an internship or apprenticeship programme. Certificate of Vocational Training is also known as Attestation of Studies, Certificate of Completion, Certificate of Graduation, Certificate of Attendance. In Table 1 presents public IEK and Specialties of our interest and Table 2 present study guides of Public Vocational Schools for each specialty in Greece.

Table 1 Public IEK and Specialties

Assistant Physiotherapist
Pharmacy Assistant
Occupational Therapy Assistant
Assistant of Radiology
Medical Laboratory Assistant
Dentist Technology Assistant
Nursing Assistant
Nursing Traumatology Assistant
Rescue – Ambulance Crew
Nursing Surgery Assistant
Nursing Obstetrics Assistant
Nursing Assistant for people with Special Diseases
Nursing Assistant in Intensive Treatment Units
Nursing Assistant Oncological Diseases
Technician of Medical Istruments

Table 2 Specialties of Vocational Schools

Assistant Physiotherapist
Courses
Anatomy
Physiology
Elements of disease
Elements of Orthopedics
Elements of Rheumatology
Hygiene
Psychology of rehabilitation
Kinesiology I, II
Massage Principles
Practical Application
Elements of surgery
Elements of Pediatrics
Elements of Neurology
Elements of Nursing
Exersice : Safety and Application I
Principles of Patient Movement
Kinesiotherapy
Exersice :Safety and Application II

Laboratory Maintenance and Technology
Cources
Principles of Application of Natural Media
First Aid
Sports Medicine
Moving Aids
Laboratory Organization and Administration Physical Therapy
Ergometry
Exersice: Safety and Application III
Nursing
Pharmacy Assistant
Courses
General Chemistry
Analytical Chemistry I
Physical and Chemical Processes
Safety and Health at Work
Statistics
Practical Application
Analytical Chemistry II
Chemical Technology
Microbiology
Organic Chemistry
Biochemistry
Pharmaceutical Physics
Medicine Control Methods
Pharmaceutical Technology I
Cosmetology I
Pharmacology – Toxicology
Pharmaceutical Technology II
Cosmetology II
Medication Quality Control
Control and Evaluation of Cosmetics
Marketing of Medicines AND Cosmetics
Practical Exercise in Pharmacy

Occupational Therapy Assistant
Courses
Anatomy
Physiology
Data of Disease
Elements of Orthopedics
Introduction to Psychology
Kinesiology I, II
Basic Principles of Occupational Therapy
Models and Approaches to Occupational Therapy
Practical Exercise
Occupational Therapy Techniques
Psycho-Social Occupational Therapy
Pathology
Elements of Pediatrics
Elements of Neurology
Elements of Nursing
Ethics and Occupational Therapy
Creativity and Occupational Therapy I,II
Psychopathology
First Aid
Daily Life Activities
Evaluation in Occupational Therapy
Special Therapeutic Techiniques
Occupational Therapy in the Elderly
Neuromuscle Disorders and Occupational Therapy
Developmental Disorders and Occupational Therapy
Organization and Administration of Occupational Therapy Units
Groups in Occupational Therapy
Assistant of Radiology
Courses
Anatomy I, II
Physiology I, II
Medical Physics Imaging /Radiophysics I, II, III
Radiotechnology
First Aid
Practical Application
Safety and Hygiene at Work
Radiotechnology – Practice in Clinic
Radioanatomics I, II
Radiodiagnostics I,II
Radiation Protection
Medical Laboratory Assistant
Courses
Basic Biological concepts – Physiology

Microbiology I, II
Biochemistry I, II
Sterilizations and laboratory utensils
Practical Application
Hematology
Laboratory Instrument technology
Parasitology
Immunology
In – hospital infections and Hygiene
Laboratory examinatios and Diagnosis
Mycitology/ Virology
Clinical Biochemistry
Safety and Ethics
Dentist Technology Assistant
Courses
Anatomy – Physiology
Convergence Morphology
Teeth Morphology Theory
Dentistry Theory
Hygiene – First Aid
Material Theory
Practical Application
Machinery
Laboratory - maintenance of it
Laboratory Organization
Porcelain Theory
Orthodontics – Dentistry
Nursing Assistant
Courses
Nursing I, II
First Aid
Anatomy
Physiology
Pharmacology
Hygiene – Microbiology
Practical Application)
Surgery I, II
Pathology
Gynecology – Pediatrics
Elements of Psychiatry – Neurology
Nursing- Practice in Hospital I,II, III)
Sterilization – Disinfection
Blood Donation
Emergency Treatment Incidents
Orthopedics

Nursing Traumatology Assistant
Courses
Nursing I, II
First Aid
Anatomy
Physiology
Pharmacology
Hygiene – Microbiology
Practical Application
Surgery I
Pathology
Gynecology – Pediatrics
Elements of Psychiatry – Neurology
Nursing- Practice in Hospital I,II, III
Sterilization – Disinfection
Traumatology I, II
Surgical Anesthesia & Recovery
Emergency Treatment Incidents
Orthopedics
Rescue – Ambulance Crew
Courses
Anatomy
Physiology
Hygiene – Microbiology
English Terminology
Organization of the Emergency pre-Hospital Care
Vital Assessment and Support Operations by Systems
Physiopathology
Receiving communication techniques in emergency call
Communication Systems
Pathologically Urgent
Practical Application
Pharmacology
Emergency traumatology - pre-hospital treatment of the wound
Massive Loss of Health
Applications of Protocols in Syndroms and Diseases
Patient Servises
Basic Knowledge of Safe Driving
Practice in Real Emergency Conditions Incidents

Nursing Surgery Assistant
Courses
Nursing I, II
First Aid
Anatomy
Physiology
Pharmacology
Hygiene – Microbiology
Practical Application
Surgery
Pathology
Gynecology – Pediatrics
Elements of Psychiatry – Neurology
Nursing- Practice in Hospital
Sterilization – Disinfection
Surgical Anesthesia & Recovery
Nursing Surgery I, II
Nursing Surgery – Practice in hospital
Surgical Techniques- Treatment in Emergencies
Nursing Obstetrics Assistant
Courses
Nursing I, II
First Aid
Anatomy
Physiology
Pharmacology
Hygiene – Microbiology
Practical Application
Surgery
Pathology
Gynecology – Pediatrics
Elements of Psychiatry – Neurology
Nursing- Practice in Hospital
Sterilization – Disinfection
Surgical Anesthesia & Recovery
Gynecological Surgery – Obstetrics
Obstetrics - Gynecology (Practice at the Hospital
Obstetric Techniques - Emergency Treatment
Nursing Assistant for people with Special Diseases
Courses
Nursing I, II
First Aid
Anatomy
Physiology
Pharmacology

Hygiene – Microbiology
Practical Application
Surgery I, II
Pathology
Gynecology – Pediatrics
Elements of Psychiatry – Neurology
Nursing- Practice in Hospital
Psychiatry I, II
Psychology – Neuropsychology
Psychiatric Nursing I, II
Psychiatric Nursing I, II/ Practice in Hospital
Nursing Assistant in Intensive Treatment Units
Courses
Nursing I, II
First Aid
Anatomy
Physiology
Pharmacology
Hygiene – Microbiology
Practical Application
Surgery I, II
Pathology
Gynecology – Pediatrics
Elements of Psychiatry – Neurology
Nursing- Practice in Hospital
Respiratory Physical Therapy
Surgical Anesthesia & Recovery
Nursing Intensive Care Unit
Special Nosology Intensive Care Unit
Nursing Assistant Oncological Diseases
Courses
Nursing I, II
First Aid
Anatomy
Physiology
Pharmacology
Hygiene – Microbiology
Practical Application
Surgery I, II
Pathology
Gynecology – Pediatrics
Elements of Psychiatry – Neurology
Nursing- Practice in Hospital
Oncological Nursing
Oncological Nursing Practice in Hospital

Clinical Oncology I, II
Chemotherapy – Radiotherapy
Surgical Anesthesia & Recovery
Pathology of Tumors
Psycho-Social Oncology
Technician of Medical Instruments
Courses
Analog Electronics
Digital Electronics
Electrical Engineering
Anatomy
Physiology
Medical Physics
Practical Application
Medical Signs and Systems
Technology of Medical Instruments
Computer Programming
Special Hospital Facilities, Hygiene and Environmental Protection
Medical Informatics
Biomedical Technology
Practical Exercise

Both public and private IEK follow the same curriculum for all health professions with minimum differences.The curriculum of health professionals does not meet the high requirements of the labor market and does not equip them with digital skills.

Thus, more and more importance should be given to the integration of courses related to the formation of digital competencies in the curriculum. According to research, the percentage of importance of digital skills for the higher level of education reaches 84.1%, while their importance for the age group 24-39, which basically consists of students and graduates, reaches 70% (Skills Panorama, 2014).

Table 3 presents the situation of Public and Private IEK in Greece such as number of majors examined, the number of semesters for any specialty and the specialties of IEK that have Computer

Table 3 Situation of Public and private IEK in Greece

Number of specialities of IEK under examination	15
Number of semesters for any specialty	5
Practical exersices for all specialities	Yes
Number of specialities of IEK with Digital skills courses	1
Number of specialities of IEK with computer science courses	1

According to the Table 3 above, the curriculum of only one specialty of IEK (Medical Instrument Technician) has computer courses and digital skills courses. In Table 4 present the computer courses and digital skills of the speciality Medical Instrument Technician.

Table 4 IT courses and Digital Skills of Medical Instrument Technician

Analog Electronics
Digital Electronics
Medical Signs and Systems
Computer Programming
Medical Informatics

VET Programs in Spain

VET is defined in Act 5/2002 as the set of training activities that prepare people for qualified performance in diverse occupations, access to employment and active participation in social, cultural and economic life. It covers the training programmes included in IVET and CVET, to enable skilling, upskilling and reskilling. Initial VET is mainly aimed at young people although it is also open to adults wishing to acquire a qualification. Vocational training for employment is offered for both the employed and unemployed workers. Ministry for Education and Vocational Training, and Ministry for Labour, Migration and Social Security are responsible for the VET system in Spain.

IVET in the education system Education in Spain is regulated by the 2006 Education Act (LOE) (Head of State, 2006) and the 2013 Act for the improvement of educational quality (LOMCE) which aims to improve student performance and curb early school leaving. LOMCE implementation started in 2014/15 with full implementation by 2017, however several measures have been deferred until a new social and political pact for education is reached.

Intermediate VET programmes (ISCED 3) consist of 2 000 hours of training divided into two academic years. Students who successfully complete these programmes are awarded a Technician diploma (título de Técnico) in the relevant speciality. Since the 2016/17 academic year, this qualification gives students direct access to higher level VET.

1. Vocational School of Health Sciences

Technician in Health Emergencies

Table 5 Courses of Technician in Health Emergencies

Basic anatomophysiology and pathology.
Psychological support in emergency situations.
Initial health care in emergency situations.
Sanitary provision.
Training and job orientation.
Preventive mechanical maintenance of the vehicle.
Emergency plans and devices for foreseeable risks.
Tele emergencies.
Special health care in emergency situations.
Business and entrepreneurial initiative.
Evacuation and transfer of patients.
Health logistics in emergencies.
Technical English for intermediate level.

PRACTICES. Training in work centers (370 practical hours in Out-of-Hospital Emergency Services). These practices are carried out during the third quarter of the second year (the student must adapt to the working hours of the collaborating entities).

You will be able to work in the health sector related to the transfer of patients or victims and the provision of initial health and psychological care, collaborating in the preparation and development of health logistics for collective emergencies or disasters, as well as participating in the preparation of emergency plans and foreseeable risk devices in the field of civil protection.

- Sanitary Transportation.

- Health Emergencies.

- Telecare.

- Emergency and Emergency Coordination Centers.

Technician in Nursing Auxiliary Care

Table 6 Courses of Technician in Nursing Auxiliary Care

Administrative operations and health documentation.
Basic nursing techniques.
Hygiene of the hospital environment and cleaning of the material.
Health promotion and psychological support to the patient.
Dental / stomatological aid techniques.
Relationships in the work environment.
Training and Labor Orientation.

Work as a professional in the health sector, in private or public companies in the sector or creating your own company.

- Primary and community care: home, health promotion, oral health, consultations and nursing homes.

- Specialized care: consultations, hospitalization, emergencies, pediatrics, special units (ICU, ICU, etc.) geriatrics, etc.

- Health centers, balneotherapy centers, departments of social affairs of Ministries, Autonomous Communities and Town Halls.

Imaging Technician for Diagnosis and Nuclear Medicine

This distance course will prepare you to become a diagnostic imaging professional and will enable you to obtain graphic records of the human body for diagnostic purposes, as well as to use and control equipment and to validate and interpret the results obtained.

Table 7 Courses of Imaging Technician for Diagnosis and Nuclear Medicine

Patient Care
Anatomy
Radiation protection
Simple radiology
Proven radiology
CT and Ultrasound
Magnetic Resonance
Nuclear Medicine
Radiopharmacy
Physical fundamentals applied to radiology
Training and Labor Orientation (FOL)
Business and entrepreneurial initiative
Final project
Practices (FCT)

FP IMAGE FOR DIAGNOSIS IN ALBACETE

Table 8 Courses FP IMAGE FOR DIAGNOSIS IN ALBACETE

Patient care.
Physical foundations and equipment.
Anatomy by image.
Radiation protection.
Training and career counseling.
English for health
Simple radiology techniques.
Special radiology techniques.
Computed tomography and ultrasound techniques.
Magnetic resonance imaging techniques.
Imaging techniques in nuclear medicine.
Radiopharmacy techniques.
Imaging project for diagnosis and nuclear medicine
Business and Entrepreneurship
Formation in work centers

FP RADIOTHERAPY AND DOSIMETRY IN ALBACETE

Table 9 FP RADIOTHERAPY AND DOSIMETRY IN ALBACETE

Patient care.
Physical foundations and equipment.
Anatomy by image.
Radiation protection.
Training and career counseling.
English for health
Treatment simulation.
Physical and Clinical Dosimetry.
Treatments with Teletherapy.
Brachytherapy treatments.
Business and Entrepreneurship
Radiotherapy and Dosimetry Project.
Formation in work centers.

VET Programs in Cyprus

The vocational education and training (VET) system of Cyprus is playing a significant role in dealing with the immediate adverse effects of the crisis on the labour market as well as in laying the foundations for future development. Cyprus, a country with limited natural resources, has always relied on its human resources to achieve a competitive advantage in an era of globalisation, technological advances and demographic changes. The education and

training system is vital in providing Cyprus with people who have the necessary knowledge, skills and attitudes and are able to respond flexibly and efficiently to the challenges of the 21st century. To continue to fulfil the expectations of the Cypriot economy and society, the education and training system, including VET, is undergoing essential reforms. The major challenges of the education and training system, as outlined in the national reform programme, is to encourage further participation in lifelong learning and to increase participation in VET. Crucial milestones in this direction are the establishment of post-secondary institutes for technical and vocational education and training, which will offer students an intermediate level of education between upper secondary and tertiary education, as well as the establishment of new modern apprenticeship, designed to constitute a viable, alternative form of training and development for young people.

2. Vocational School of Health Sciences

The school provides healthy/sick individuals, families, and the community with preventive, curative, and rehabilitative health services at national and international levels, taking the role of educator, practitioner, manager, and researcher as well as doing scientific studies for the betterment of the community and the profession, training health care personnel with the qualifications of a good communicator, critical thinker, and problem-solver, and user of scientific technology. The Vocational School also aims to provide education and do research at national and international levels, having a strong institutional culture and well-established identity with qualified, expert academics who can combine science and community service. The graduates will have a privileged place in the field of health sciences and will be preferred by health institutions due to their successful health care practices.

Courses:

Anesthesia Program
Child Development Program
First and Emergency Aid Program
Medical Imaging Techniques Program
Surgery Services Program
Pharmacy Services Program
Physiotherapy Program

3. Cyprus School of Molecular Medicine

The Cyprus Institute of Neurology & Genetics (CING), as a Center of Excellence and a Referral Center in basic and applied research in biomedical and clinical sciences, combines its three pillars: services, research and education, in order to produce novel knowledge in biology and diseases with the aim of upgrading the quality of life of its patients. This has been its scope for thirty years now; to offer high level services to its patients, the society and to our country as a whole. This will continue to be its scope. Having built on the experience of CING, the Cyprus School of Molecular Medicine (CSMM) was developed to function as a catalyst for the implementation of the Institute's mission by contributing even more to its research output and clinical applications.

Courses:

Basis of Monogenic Diseases
Basis of Complex Diseases
Neurosciences & Neurogenetics
Gene and Cell Therapy
Methodologies & Technologies Applied in Medical Genetics
Biochemical Basis of Genetic Diseases

4. Cyprus Institute for Psychotherapy

The Cyprus Institute of Psychotherapy serves psychotherapy and applied psychology, including professional training programs in psychotherapy with high standards. It operates therapeutic mental health centres and preventive programmes based on the synthetic approach and promote applied research in psychotherapy and psychology. Cyprus Institute for Psychotherapy have developed regional and international collaborations for the promotion of Synthetic Psychotherapy by coordinating the Hellenic SEPI Regional Network and co-founding the Hellenic SEPI Regional Network of Synthetic Psychotherapists and the Hellenic SEPI Institute of Psychology and Psychotherapy. For the realization of our mission, the Holy Archdiocese of Cyprus and the Republic of Cyprus support our actions through grants from the Office of the Commissioner for the Presidency, the Cyprus Addiction Treatment Authority and the Local Government. We have developed partnerships with the Directorate of Mental Health Services of the Ministry of Health, with state hospitals in Greece, with the Cyprus Police, with universities in Greece and Cyprus, the Margarita Liasidou Foundation, etc.

Courses:

Professional Framework and Ethics of Psychotherapy
Psychotherapeutic Assessment
Basic Psychotherapy Skills
Psychotechnical Tools
Diagnostic Systems for Mental Illness
Brain and Psychopharmacology
Medical Psychotherapy
Clinical Psychotherapy for Children and Adolescents
Clinical Psychotherapy for Adults
History of Psychotherapy
The Synthetic Psychotherapy Movement
Common Factors in Psychotherapy
Principles of Group Psychotherapy
Models of Synthetic Psychotherapy
Research in Psychotherapy
Complementary Therapies
Intercultural Psychotherapy

5. Kes College – Vocational Training Center

A pioneering step of KES College is the creation of the Pharmacy Assistants' Programme. This two-year programme offers full-time attendance leading to a Diploma. The Pharmacy Assistant programme is the first in Cyprus, is registered in the Register of the Ministry of Education and Culture and is also evaluated - Certified by the Council of Educational Evaluation - Accreditation [C.E.E.A]. The profession of Pharmacy Assistant is a responsible and, at the same time, interesting paramedical profession related to Health and more specifically to the pharmacy.

Courses:

Human Anatomy
General and Inorganic Chemistry
Cell Biology
General English I
Safety and Hygiene at Work
First Aids
Elements of Statistics / Accounting
Basic Principles and Computers Applications
Human Anatomy
General and Inorganic Chemistry
Cell Biology
General English I
Safety and Hygiene at Work
First Aids
Elements of Statistics / Accounting
Basic Principles and Computers Applications
Physiology I
Organic Chemistry
Pharmacy Law and Ethics
English Terminology
Introduction to Pharmacology
Organization and Pharmacy Management Software
Pharmaceutical Microbiology
Pharmaceutical Chemistry and Elements of Chemistry of Natural Products
Pharmacology I
Food Supplements
Medical Devices
Natural Pharmaceutical Products
Elements of Pharmaceutical Technology
Practical Training (in Pharmacy)
Pharmacology II
Quality Control of Medicines
Special courses in Cosmetology

Specialized Pharmacology: Formulary
Pharmaceutical Marketing
Preparation and Control of Pharmaceutical Forms
Practical Training (in Pharmacy)

6. City Unity College

Health Psychology focuses on the roles of psychology, biology and social or environmental factors on health and health related behaviour. Health psychologists promote healthier lifestyles and seek to improve well-being by understanding the impact that health related thoughts, feelings and behaviour can have on the individual. Health strategy has been shifting from the treatment of disease to the maintenance of health and prevention of illness. This MSc aims to produce high quality graduates that are in a good position to improve health and well-being by using specific psychological knowledge and skills. The programme is specifically designed with future employability in mind and provides a student centred approach to preparing graduates for future training and / or careers. Some graduates go on to complete further training to become fully qualified health psychologists, but many others go on to work in health-related career roles including health promotion, education, health and well-being at work, research or develop their own businesses.

Courses:

Changing Health Behaviour
Biopsychosocial Issues in Health
Health Psychology and the Health Psychologist
Communication in the Health Care Context
Chronic Illness
Stress and Pain
Research Methods and Design
Dissertation Proposal

VET programs in Romania

In Romania, Law Nr. 278/2015 of November 12, 2015 ameding and supplementing the Government Emergency Ordinance no. 144/2008 on the profession of nurses, midwives and medical assistants, and the organization and functioning of the Order of Nurses, Midwives and Medical Assistants in Romania, Issuer Romanian Parliament, has been published in November 25, 2015. The Order no. 4864/November 2002 state the on the units of competency that can be gained from qualification through high-school - the technological path and post-secondary school; Health Ministerial Order no. 613/2013 approved the organization and conduct of the training programs for obtaining the complementary specialization. Post-secondary medical education is partially subsidized by the state and lasts

3 years according to the complexity of the qualification. Post secondary programmes give access to qualifications for secondary education graduates, with baccalaureate diploma. Graduates of post-secondary education, who graduate the professional qualification certification examination, receive professional qualification certificate, according to the level established by the Romanian National Qualifications Framework and a Descriptive Supplement of the certificate in Europass format.

1. Nurse responsible for general care

General nurse occupation is specific to the medical and social domain, following all matters relating to promotion, health maintenance and recovery. Nurse activity consists of applying specific methods and techniques of investigation and treatment, for which specialized knowledge is required

Courses:

Elements of medical statistics and informatics
The human anatomy and physiology
Microbiology, virology, parasitology
Biochemistry
General and medical psychology
Medical semiology
Hygiene, prevention and control of infections
Quality of care and patient safety
Biophysics and medical imaging
Pharmacology
General Nursing
Embryology and genetics
Epidemiology
Nutrition and dietetics
Infectious diseases and specific nursing
Internal Medicine and Specific Nursing
Specific surgery and nursing
Dermatology and specific nursing
Anesthesia, intensive care and specific nursing
Obstetrics, gynecology and specific nursing
Childcare, pediatrics and specific nursing
Neurology and specific nursing
Mental health, psychiatry and specific nursing
Gerontology, geriatrics and specific nursing

Oncology and specific nursing
Palliative care
Community nursing and care for people with disabilities
Conduct in medical-surgical emergencies, crisis situations and disasters
Nursing research

2. Radiology nurse/technician

The radiology nurse/technician has principal competences: patient radiography, film development, assisting physician at the radiology exams. Also, this profession requires administrative skills, organization of the activities and communication with medical staff and patients.

Courses:

Information and communication technology
Anatomy
Physiology
Laboratory organization
General patient care techniques
Protection, health and safety at work
Radiophysics and radiation dosimetry
Descriptive, topographic and radiological anatomy
Radiological investigation techniques
General hygiene and epidemiology
Radiology
General semiology
Pathophysiology
Administration of drugs and contrast agents
Internal Medicine
General surgery
Oral and maxillofacial surgery
Ultrasonography exploration techniques
Medico-surgical emergencies
Interventional radiology
Orthopedics and traumatology
Computer tomography imaging
Magnetic resonance imaging
Pediatrics and pediatric radiological investigation
General and medical psychology

Radiotherapy
Computer tomography investigation techniques
Magnetic resonance imaging techniques
Radiation therapy techniques

3. Pharmaceutical technician/Pharmaceutical assistant

The pharmacy assistant must be very familiar with the pharmaceutical products (method of administration, therapeutic indications, side effects, interaction with other medicines), receipt and labelling of medicines, arranging the products on the shelf, dividing and packing the official products produced in the pharmacy, dispensing the medicines, which is carried out under the guidance of the pharmacist, as well as issuing the medicines without a prescription.

Courses:

Elements of botany
Human anatomy and physiology
Virology, bacteriology and parasitology
Pharmaceutical propaedeutics and general operations in pharmaceutical practice
Medical semiology
General pharmacognosy
Pharmaceutical forms as dispersed, homogeneous systems
Chemistry of inorganic pharmaceutical compounds
Elements of sanitary and pharmaceutical organization
General pharmacology
Biochemistry
Special pharmacognosy
Pharmacotherapy
Sterile pharmaceutical forms
Information and communication technology
Chemistry of compounds with action on the central nervous system
Phytotherapy
Pharmaceutical forms as dispersed, heterogeneous systems of which: practical training
Solid pharmaceutical forms - powders and pills
Chemistry of pharmaceutical compounds with various physiological actions
Solid pharmaceutical forms - tablets and dragees
Dermo-cosmetic and hygiene preparations

4. PHYSIOTHERAPY ASISTANT

Performing physiotherapy treatments: currents of different frequencies, hydrotherapy, phototherapy and magnetic fields to improve the health of patients. BALNEO

PHYSIOTHERAPY ACTIVITIES:
• applying magnetic field treatments
• application of treatments with low, medium and high currents
• application of phototherapy treatments: ultraviolet, infrared
• application of hydrotherapy treatments: galvanic baths, kineto baths
• underwater shower
• training the patients and the family to continue the treatment
• monitoring the patient's evolution • preparing the patients for the application of the treatment
ADMINISTRATION:
• the supply of necessary materials and medicines
GENERAL SKILLS AT WORK:
• application of labor protection norms and labor protection and safety norms
• ensuring hygienic and sanitary conditions • communication with patients
• interactive communication at the workplace
•professional development PLANNING:
• coordinating the activity of the auxiliary personnel
• organization of physiotherapy activity
• scheduling patients for physiotherapeutic spa treatment

Courses:

Anatomy and physiology of the human body
Physics (mechanics and electricity)
Care techniques
General hygiene and epidemiology
Semiology and internal medicine
Surgery, orthopedics and traumatology
Information and communication technology
Medico-surgical emergencies
Objectives and techniques in physical therapy
Hydrotherapy
Joint biomechanics and muscle balance
Low, medium and high frequency current therapy
Phototherapy and magnetic field therapy
Elements of rheumatology used in medical recovery
Elements of neurology and psychiatry used in medical recovery
Physical therapy

Balneoclimatology
Pneumotherapy
Occupational therapy

5. MEDICAL LABORATORY TECHNICIAN

The medical laboratory technician is a specialized employee in a hospital or clinic laboratory. The medical laboratory technician conducts research using various instruments and methods. They are responsible for executing their work accurately while following regulations, writing professional medical reports as needed.

Courses:

Information and communication technology
Human anatomy
Occupational health and safety
General hygiene and public health
Genetics
Internal diseases
Surgical diseases
Medical biochemistry
Clinical biochemistry techniques
Medical immunology
Medical immunology techniques
Bacteriology
Bacteriology techniques
Virology and virology techniques
Epidemiology and infectious diseases
Hematology
Hematology techniques
Dermatological and sexually transmitted diseases
Pathological anatomy

VET programs in Germany

The Federal Institute for Vocational Education and Training (in abbreviation BBIB) was founded in 1970. Its current basis in law is the Vocational Training Act of March 23, 2005 (in abbreviation BBiG) as a federal government institution for policy, research, and practice in the field of vocational education and training. [48]

The main task of the BIBB is to contribute to vocational education and training research through scientific research. In addition, according to section 90, article 3 of the BBiG, it is to participate in the preparation of training regulations and ordinance, vocational training reports and the implementation of vocational training statistics. The BBIB promotes pilot projects and interacts in international cooperation in vocational education and training. According to section 90, articles 2-4 of the BBiG, the BBIB supports the planning, establishment and advancement of inter-company vocational training centres and contributes to the improvement and expansion of vocational distance learning. [49]

Current topics of BIBB are the Vocational Orientation Programme, Education Chains initiative, Inter-company vocational training centres, Career orientation for refugees, Pilot projects, Continuing Education Grant, National Agency Education for Europe at the BIBB. [49]

In Germany, there are slight differences in the education systems of the individual federal states due to cultural sovereignty. In principle, there is a ten-year period of compulsory full-time schooling. Three different degrees can be achieved, the general secondary after Grade 9, the secondary after Grade 10 and the university entrance qualification after Grade 12 respectively 13. Obtaining a diploma from the general education system entitles the holder to transfer to the dual training system, which leads to the acquisition of a recognized occupation requiring formal training. Regarding intake, the dual apprenticeship system dominates the German VET system. [50]

In the area of higher education, we have various sponsorships in Germany. According to the Education Report of 2020, there are 427 higher education institutions in Germany, of which 286 are publicly funded, 107 are privately funded and 34 are church-funded. [51] At public universities, a university entrance qualification after Grade 12 respectively 13 in general education programs or completion of a bachelor's program is required. Tuition was abolished for the first qualifying studies in all federal states. [52][53] Any other costs must be financed by the student. In private universities, tuition fees are also payable. However, the cooperating companies pay vocational training pay in a dual study program in the health sciences. This can support students in their studies and reduce the financial burden.

Admission

An apprenticeship (EQF 4) in the dual training system corresponds to an average of three years. With an university entrance qualification, the duration of training is shortened to two years. The training companies select the apprentices themselves. The approval of a training company grants access to a vocational school. The apprentice completes his apprenticeship in both locations and prepares for future activities. Otherwise, there are no access requirements apart from completion of compulsory education and 18 years of age, in which the vocational school is included. [54]

Access to the postsecondary level is possible (figure 1), after completion of the apprenticeship, a general education degree or a general certificate with vocational school orientation and elements of Work-Based-Learning. With a university entrance qualification after Grade 12 respectively 13, a bachelor program (EQF 6) of 3-4 years can be attended at a university of applied science, a dual university or a technical college. This program is also open for people with completion of special programs with Work-Based-Learning (EQF 4-5) or after education with additional qualification by further education to master (“Meister”) or technician (“Techniker”) (EQF 6-7). [50][54][55]

Practical Training

The practical training is aligned to the individual recognized professions by the training and examination regulations. There are differences here in the respective number of hours in theoretical and practical training. For the orientation of training regulations, legal and educational policy requirements must be taken into account. The regulations should be formulated in a competency-oriented manner based on the European Qualifications Framework (EQF) and according to professional competence as defined in the Vocational Training Act (BBiG). [56] [57]

The average duration of training is three years in the recognized occupations. In the health professions, the theoretical part is between 1920 and 3170 hours and the practical part between 1230 and 2680 hours. The practical part is carried out by passing through different companies and departments and preparing for the future field of activity. [60][61][62][63][64[65][66]

The structuring takes place within a week during the three years by once a week lessons in a vocational school or medical school attached to the hospital and the practical part four days in the company. Another model is the block internship, in which the theoretical and practical parts alternate in blocks over weeks or months. In the field of therapeutic sciences, a model of two years of theoretical training and practical training in the last year is also possible. [52]

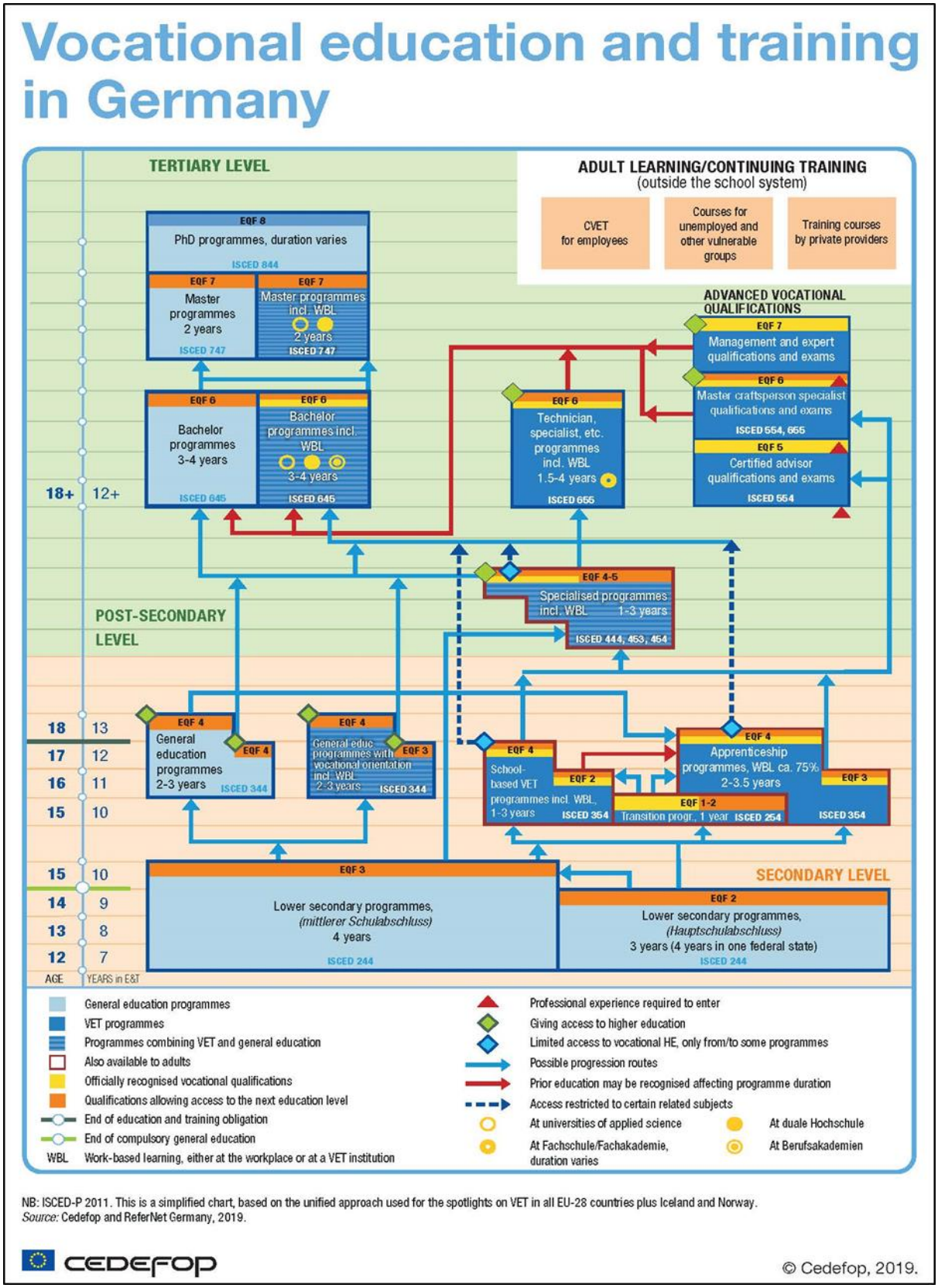

Figure 1. Vocational education and training system chart. [54]

Qualifications and accreditation

After a training, regulated in the respective training and examination ordinance, a Certificate of Vocational Training is awarded after the respective training period when the final examination is passed.

Specialties of our interest in Federal and state education and training regulations for occupations in the health and social care sector

Training programs are in the occupations register provided in vocational schools that are subject to the school laws of the federal states (Section 3 (1) BBiG) or in health care schools. [58]

Specialty	Duration of Training (months)	Theoretical training hours	Practical training hours
Emergency Paramedic [58] (Full-time/Part-time)	36 / 60	1920	2680
Medical Laboratory Assistant [63]	36	3170	1230
Medical Technician Assistant in Function Diagnosis [63]	36	2370	2030
Nursing Professional [64] (Full-time/Part-time)	36 / 60	2100	2500
Occupational Therapist [65]	36	2700	1700
Pharmacy Technician [66]	30	2600	n.n.
Physiotherapist [67]	36	2900	1600
Radiological Technologist [63]	36	2800	1600
Surgical Assistant [68] (Full-time/Part-time)	36 / 60	2100	2500

Further education regulated by state law of our interest

State law continuing education regulations for health and social service professions.

Specialty	Theoretical training hours	Practical training hours
Nursing in Intensive Care and Anaesthesia [69]	720	2079
Nursing in Oncology Care [69]	720	2156
Nursing in Psychiatric Care [69]	720	1386
Nursing in Surgical and Endoscopic Care [69]	720	2156

Dual study programs

In the course of the Bologna Process, which started 1999, the aim was to harmonize education systems across Europe. Since this agreement, efforts to becoming more academic the German education system have been growing. This has resulted in many different models of courses of study in the health sector. [59]

In addition to the traditional courses of study, dual courses of study in the German education system have been developed in the last few years to an increasing extent. From 2004 to 2016, the number of dual degree programs tripled. In addition, the participation in companies and the accompanying students grew (see Figure 2). [60]

The system of dual study programs is possible in different models. These can be attended in the area of initial training, training-integrated or practice-integrated. In study programs for continuing vocational training, there is the option of occupation-integrating or occupation-accompanying study. The training-integrating dual study program combines study with training in a recognized training occupation and requires an employment contract. The practice-integrating dual study program combines the study program with longer practical phases in participating companies and requires an employment, internship or traineeship contract. The job-integrating dual study program combines the study program with a part-time job and requires an employment contract, which can also be part-time. In the case of a part-time study program, the program is complete in self-study alongside a full-time professional activity and does not require any further access. [61]

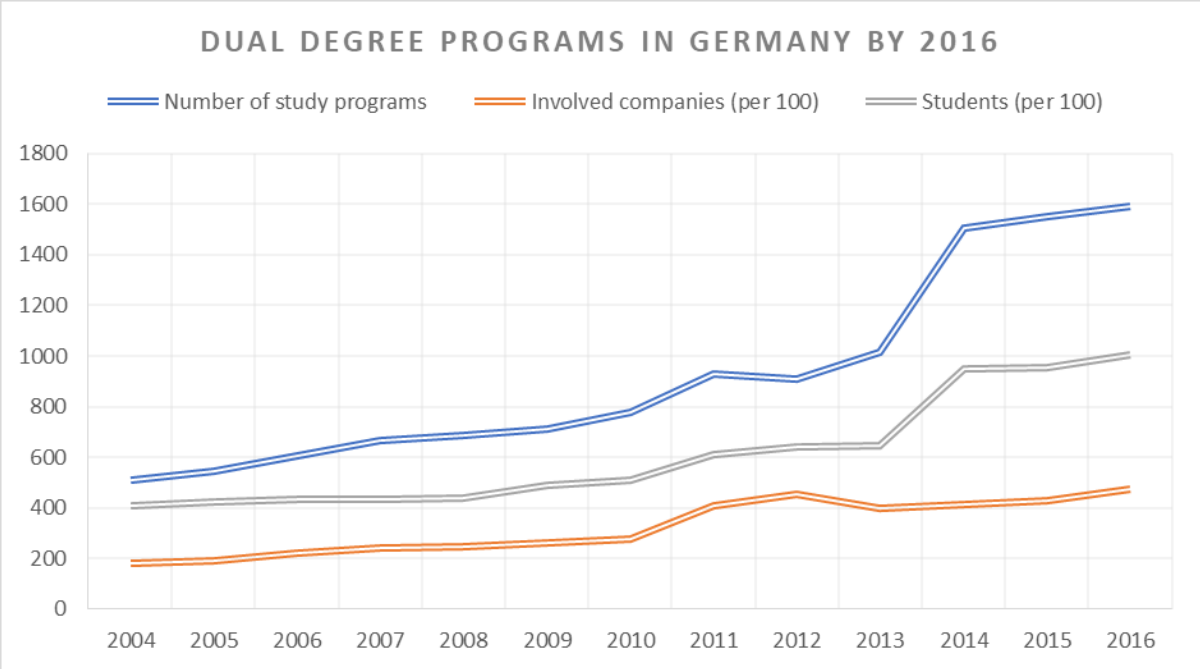

Figure 2 Dual degree programs in Germany (number of degree programs, cooperating companies, students) from 2004 to 2016. [59]

There is a wide variety of study programs in the German system. In the study programs of the health care system, most programs were founded in the area of training-integrating dual study programs. Here exist a high interaction of practice in the enterprises and the theory. Due to the training-integrating portion, these are based on the respective professional laws for the recognition of the management of the associated job title. Universities also offer additional modules in different areas. As a result, there are significant differences in the focus areas and modules in Germany. While some universities focus on the current issues of promoting digital skills, other universities provide support in the area of start-up concepts for upcoming challenges in the labor market.

Study Guides of Vocational Schools for each Specialty

Emergency Paramedic [62]
Theoretical part
Recognize, record and evaluate emergency situations
Select rescue service measures and hazard prevention measures, carry out and evaluate
Communication and interaction
Structure processes in rescue services and integrate and apply measures in algorithms and operational concepts
Internal and interdisciplinary cooperation
Align actions in the rescue service with quality criteria that are oriented to legal, economic and ecological framework conditions.
Participation in medical diagnostics and therapy
Life-supporting measures
Measures to prevent serious damage to health
Develop professional self-image and learn to cope with professional demands cope
Development of the emergency paramedic profession in a societal context
Working in groups and teams
Practical part
Nursing department
Interdisciplinary emergency department
Anesthesia and surgery department
Intensive care department
Obstetrics, pediatrics or pediatric surgery department/intensive care unit or ward
Psychiatric, gerontopsychiatric or gerontology department

Medical Laboratory Assistant [63]
Theoretical part
Vocational, legal and civic education
Mathematics
Biology and ecology
Hygiene
Physics
Statistics
Data processing and documentation · Terms, structure and tasks of data processing systems · Basics of data processing · Basics of hardware with instructions and exercises · Basics of software with practical applications · Basics of data protection and data backup
Chemistry/Biochemistry
Anatomy
Physiology/Pathophysiology
Pathology
First aid
Psychology
Specialized English
Immunology
Histology/Cytology
Clinical Chemistry
Hematology
Microbiology
Equipment and tools

Practical part
Histology/Cytology
Clinical chemistry
Hematology
Microbiology

Medical Technician Assistant in Function Diagnosis [63]
Theoretical part
Vocational, legal and civic education
Mathematics
Biology and ecology
Hygiene
Physics
Statistics
Data processing and documentation · Terms, structure and tasks of data processing systems · Basics of data processing · Basics of hardware with instructions and exercises · Basics of software with practical applications · Basics of data protection and data backup
Chemistry/Biochemistry
Anatomy
Physiology/Pathophysiology
General disease
Pharmacology
First aid
Psychology, Pedagogy, Sociology
Specialized English
Equipment and tools

Specific pathology
Neurophysiological functional diagnostics
Cardiovascular functional diagnostics
Pneumological functional diagnostics
Practical part
Neurophysiological functional diagnostics
Audiological and ENT functional diagnostics
Cardiovascular functional diagnostics
Pneumological functional diagnostics

Nursing Professional [64]
Competencies
Responsibly plan, organize, design, implement, control and evaluate nursing care for people of all ages.
Plan, organize, design, implement, control and evaluate nursing processes and nursing diagnostics for people of all ages with health problems, with a special focus on health promotion and prevention.
Responsibly plan, organize, design, implement, control and evaluate nursing processes and nursing diagnostics for people of all ages in highly stressful and critical life situations.
Act purposefully in life-threatening as well as crisis or disaster situations.
Support, accompany and advise people of all ages in shaping their lives.
Promote development and autonomy across the lifespan.
Communicate and interact with people of all ages and their caregivers in a way that is appropriate to the person and situation and ensure appropriate information.

Responsibly organize, design, manage and evaluate information, training and counseling with people of all ages.
Act in an ethically reflective manner.
Assume responsibility in the organization of the qualification heterogeneous care team.
Independently carry out medical orders in a nursing context.
Participate in interdisciplinary teams in the care and treatment of people of all ages and ensure continuity at interfaces.
Ensure the quality of nursing services and care in the various institutions.
Take care of contexts and system interrelationships into account in nursing activities and observe economic and ecological principles.
Align nursing actions with current scientific knowledge, especially with nursing research findings, theories and models.
Take responsibility for the development (lifelong learning) of one's personality as well as professional self-image.

The content of the training to become a Nursing Professional has been set up on a case-by-case basis according to competencies. This new training and examination regulation for the nursing profession came into force on January 1, 2020. [62]

Occupational Therapist [65]
Theoretical part
Vocational, legal and civic education
Technical language, introduction to scientific work
Basics of health and hygiene
Biology, descriptive and functional anatomy, physiology
General disease
Special disease theory includes diagnostic, therapeutic, preventive and rehabilitative measures as well as psychosocial aspects

Pharmacology
Basics of occupational medicine
First aid
Psychology and Pedagogy
Disabilities Education
Medical sociology and gerontology
Craft and design techniques with different materials
Games, tools, rails and technical media
Basics of occupational therapy
Motor-functional treatment methods
Neurophysiological treatment
Neuropsychological treatment
Psychosocial treatment
Occupational therapy
Adaptive procedures in occupational therapy
Prevention and rehabilitation
Practical part
Psychosocial (psychiatric/psychosomatic) area
Motor-functional, neurophysiological or neuropsychological area
Occupational therapy

Pharmacy Technician [66]
Theoretical part
Pharmacology
General and pharmaceutical chemistry
Galenic
Botany and drugs
Hazardous substances, plant protection and environmental protection science
Special disease theory includes diagnostic, therapeutic, preventive and rehabilitative measures as well as psychosocial aspects
Medical Device Sciences
Dietetics and nutrition
Personal Care Science
Physical equipment knowledge
Mathematics (subject-related)
Pharmaceutical legal knowledge, professional knowledge
General education subjects (German including communication, foreign language (subject-related), economics and social studies)
Chemical-pharmaceutical exercises including examination of Body fluids
Exercises in drug knowledge
Galenical exercises
Pharmacy practice including data processing
Practical part
Legislation on the operation of pharmacies and the circulation of medicinal products, narcotics and hazardous substances
Finished medicinal products, their indications and proper storage
Hazards associated with the use of medicinal products
Characteristics of drug abuse and drug dependence
Emergency medicines by Annexes 3 and 4 of the Pharmacy Operations Ordinance

Testing of drugs, medicinal substances and excipients in the pharmacy
Production of medicines in the pharmacy
Medical prescription execution
Procurement of information on medicinal products and pharmacy-usual goods under using scientific and other reference works including computerized drug information systems
Calculation of the prices of finished medicinal products, partial quantities of a finished medicinal product, Prescription drugs as well as medical products customary in pharmacies
Information when dispensing medicinal products, in particular on the use and proper storage and hazard warnings
Records according to § 22 of the Pharmacy Operations Ordinance
Goods are customary in pharmacies, in particular dietetic foods, infant and child nutrition products, personal hygiene products and articles, dressing materials and other medical products as well as advice on the proper use of these goods.
Environmentally sound disposal of pharmaceuticals, chemicals, medical devices and packaging as well as rational use of energy and materials

Physiotherapist [67]
Theoretical part
Vocational, legal and civic education
Anatomy
Physiology
General disease
Specific pathology
Hygiene
First aid
Applied physics and biomechanics
Language and literature
Psychology/Pedagogy/Sociology
Prevention and rehabilitation
Training theory

Theory of Motion
Physical Education
Physiotherapeutic diagnostic and examination techniques
Physiotherapy treatment techniques
Massage
Electrotherapy, Phototherapy, Radiotherapy
Hydrotherapy, balneotherapy, thermotherapy and inhalation therapy
Methodical application of physiotherapy in the medical specialties
Practical part
Surgery
Internal Medicine
Orthopedics
Neuroscience
Pediatrics
Psychiatry
Gynaecology

Surgical Assistant [68]
Competencies
Job-related tasks in the outpatient and inpatient area Plan independently and execute in a structured manner
Participate in medical diagnostics and therapy and carry out medical orders independently
Responsible interdisciplinary and interprofessional action help to shape
Taking responsibility for the development of one's personality (lifelong learning), developing professional self-image and coping with professional demands
Aligning one's actions with legal requirements and quality criteria
Communicate and interact with patients of all ages and their caregivers, taking into account sociological, psychological, cognitive, cultural, and ethical aspects.
Act purposefully in life-threatening crisis and disaster situations act

Comprehensively master and observe hygienic working methods

The contents of the theoretical and practical training formulated as professional, personal and social competence focal points for the exercise of the profession. [68]

Radiological Technologist [63]
Theoretical part
Vocational, legal and civic education
Mathematics
Biology and ecology
Hygiene
Physics
Statistics
Data processing and documentation · Terms, structure and tasks of data processing systems · Basics of data processing · Basics of hardware with instructions and exercises · Basics of software with practical applications · Basics of data protection and data backup
Chemistry/Biochemistry
Anatomy
Physiology
Pathology
First aid
Psychology
Specialized English
Immunology
Image processing in radiology
Radiological diagnostics and other imaging techniques
Radiotherapy
Nuclear medicine

Radiation physics, dosimetry and radiation protection
Electrodiagnostics
Practical part
Radiological diagnostics and other imaging techniques
Radiotherapy
Nuclear Medicine

Study guide of continuing education

The continuing education in the field of nursing is regulated by state law, there are minimal differences in the provisions of theoretical and practical content. The presentation of the teaching content for further training in Nursing is based on the example of the state of Lower Saxony. The curriculum is modifiable by state law but affiliated with the respective continuing education regulations in Germany.

Nursing in Intensive Care and Anaesthesia [69]
Theoretical part
General nursing knowledge
Management competence
Business organization, business basics
Legal basis
Psychosocial and communication skills
Nursing competence
Intensive care and anaesthesia
Basic knowledge relevant to nursing from related sciences
Practical part
Anesthesia departments operative specialties
Medical or surgical intensive care units of different specialties and focuses
Diagnostic and therapeutic functional area

Nursing in Oncology Care [69]
Theoretical part
General nursing knowledge
Management competence
Business organization, business basics
Legal basis
Psychosocial and communication skills
Nursing competence
Oncological care
Basic knowledge relevant to nursing from related sciences
Communicative and psychosocial area
Practical part
Internal department with tumor patients
Operative department with tumor patients
Radiation therapy unit
Oncology pediatrics department
Hematology or oncology outpatient clinic
Ambulant or home care

Nursing in Psychiatric Care [69]
Theoretical part
General nursing knowledge
Management competence
Business organization, business basics
Legal basis
Psychosocial and communication skills
Nursing competence
Psychiatric care
Basic knowledge relevant to nursing from related sciences
Practical part
General psychiatric-psychotherapeutic care
Gerontopsychiatric or gerontological care
Child and adolescent psychiatric care
Care for addicts
Care of people with intelligence reduction or with disorders in mental development
Forensic psychiatric care

Nursing in Surgical and Endoscopic Care [69]
Theoretical part
General nursing knowledge
Management competence
Business organization, business basics
Legal basis
Psychosocial and communication skills
Nursing competence

Operative and endoscopic care
Care before, during and after diagnostic and therapeutic procedures
Instrument, device and material science, medical technology · Instrument overview, instrument assembly, instrument handling, instrument maintenance · High-frequency surgery · Systems of image and light transmission · Therapy, ultrasound and endoscopy systems
Hygiene
Basic knowledge relevant to nursing from related sciences
Special pharmacology and anaesthesia
Indication, methods and techniques of diagnostic and therapeutic surgery and endoscopic procedures, anatomy, physiology and topography.
Practical part
Diagnostic and therapeutic functional areas of general and abdominal surgery
Diagnostic and therapeutic functional areas of trauma surgery or orthopedics

In Germany, few differences are evident in public and private schools, since both types of sponsorship must adhere to the same curriculum. In the recognized training occupations and the dual universities, especially in the training-integrating courses of study, this alignment is evident due to the integration of the training component and their final examination for the acquisition of the state-recognized occupational title.

Institutionally, the differences in the German market, especially in the study programs, show that there is a focus on the development of the profession. Some study programs implement components to promote digital skills, while other study programs and training courses have not yet included these. It is therefore possible to speak of different characteristics.

In the analysis of the curricula, approaches to promoting digital skills and a basic understanding founded in the training and examination regulations only in the case of Radiologic Technologist, Medical Laboratory Assistant and Medical Technician Assistant in Function Diagnosis. The Radiological Assistants implement parts of the imaging and data systems and their transmission in their curriculum. In the sense of data transmission and data systems can be found in the technical area of further training to become a nurse for operative and endoscopic areas. In the further training to become a Nurse in Surgical and Endoscopic Care the modules to improve digital skills and get a basic understanding are implemented.

In conclusion, these programs show small parts to improve digital skills in the training of health professionals in Germany. With the exception of three training courses and one continuing education course, there are no special courses to develop these skills to an

advanced level. The demand in the labor market is great and is increasingly becoming a condition for quality, good care. The healthcare sector is in the middle of changing process in digitalization. People want to experience technological progress, as they have in other areas. After all, processes can be optimized and medical care supported. In addition, there are too few skilled personnel to meet the ever-increasing demand.

VET Curricula Guidelines

Regarding the results of WP2 O2.1 Report on digital skills needs and gaps in health sector, have shown that the type and extent of digital skills development needs, differs amongst different professional groups. Education, training, and maintenance of digital skills should be tailored to the needs of each group. Data analysis in the context of this project, indicate that the strategic goal for digital skill development and maintenance should be adjusted to the relevance of professional groups. Hence, the strategic goal for supporting professionals should aim at moving the approximately 43% (all questions mean value) of workers with no knowledge of digital applications towards being able to perform simple tasks with or without guidance. The 52% (all questions mean value) of workers in the category of relevant professions without or with limited knowledge should be trained so that they are at least able to perform straightforward tasks. Finally, the workers in the most relevant professions should be enabled to perform at advanced and even expert level at a considerably higher rate than the approximately 9% (all questions mean value) registered in this project.

There is a considerable number of digital skills that need to be developed amongst different collaborating professional groups, therefore, designing and providing education and training as well as maintaining the appropriate digital skills for each group becomes a complex procedure.

Therefore, healthcare professional groups should receive standardized trainings, and their skills should be continuously updated through a certification process.

The provision of standardised training requires central management to achieve uniformity across Europe.

The curricula of this curriculum should include, but are not limited to, the following main categories/subjects:

- Hardware Interaction
- Using the Internet and the Cloud
- Project management, collaboration and sharing
- Data management and analysis
- DICOM and Image processing
- Data protection and information security

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