No	Topic	Type	Title	Description	Keywords	Format	Price	Access	Author/Source	URL	Status	Language	Year	Duration	Media
19	Industry 4.0	VR / AR / MR / XR	Virtual reality in automotive industry	Potential use of VR in the automotive industry.	Virtual reality, Automotive industry, Ergonomics, Simulation	Report	Free	Free under conditions	Fakulteta za elektrotehniko	https://repozitorij.uni-lj.si/IzpisGradiva.php?id=121652	Outdated	Slovenian	2020	To be estimated	Text
20	Industry 4.0	VR / AR / MR / XR	Use of VR in education	Teachers report on using VR technology in class (what software and hardware did he use, students feedback and more).	Virtual reality, Education, Homemade	Report	Free	Free under conditions	Projekt 360	https://projektgjv360.splet.arnes.si/uporaba-google-expeditions-pri-pouku/	Contemporary	Slovenian	2017	4	Text, pictures
21	Industry 4.0	VR / AR / MR / XR	TravelAR Slovenia	By co-creating and involving the local community, they strive to preserve and visualize the sights of local cultural heritage.	Augmented reality, Travel, Education	Webpage	Free		Podjetniški inkubator Kočevje	http://www.travel-ar.si/sl/	Contemporary	English	2017	To be estimated	Text, pictures, video
22	Industry 4.0	VR / AR / MR / XR	XR Slovenija	The Slovenian community of XR creators and its enthusiasts. Questions, Debates, Meetings ... All about Xr!	Cross reality, Community, Creators, Enthusiasts	Webpage	Free		XR Slovenija	https://www.facebook.com/groups/1564041590497234/	Contemporary	English	2020	To be estimated	Picture, video
23	Industry 4.0	VR / AR / MR / XR	Mobile game "Pokemon GO"	Pokémon Go is a free game for smartphones, which, works on the principle of augmented reality.	Augmented reality, Mobile game, Entertainment	Webpage	Free		Niantic, Inc.	https://pokemongolive.com/en/	Contemporary	English	2016	To be estimated	Mobile game
24	Industry 4.0	VR / AR / MR / XR	Mobile app. "Snapchat"	Lens Studio application designed for artists and developers, to build augmented reality experiences for users of their app. Snapchat.	Augmented reality, Computer app., Entertainment	Webpage	Free		Snap Inc.	https://lensstudio.snapchat.com/	Contemporary	English	2015	To be estimated	Computer app.
25	Industry 4.0	VR / AR / MR / XR	Magic Leap 1	Their product can read a room in moments. It understands corners, edges and surfaces, so the apps can interact with your surroundings.	Mixed reality, Hardware, Head-Mount, SmartGlasses	Webpage	Free		Magic Leap, Inc.	https://www.magicleap.com/en-us/magic-leap-1	Contemporary	English	2018	To be estimated	Text, picture, video
26	Industry 4.0	VR / AR / MR / XR	HoloLens 2	Mixed reality device with that enhance collaboration. Help your company be more productive and innovate with more purpose.	Mixed reality, Hardware, Head-mount, SmartGlasses	Webpage	Free		Microsoft HoloLens	https://www.microsoft.com/en-us/hololens	Contemporary	Slovenian	2019	To be estimated	Text, picture, video
27	Industry 4.0	VR / AR / MR / XR	Workshop for virtual reality	A workshop on virtual reality was taken place in OpenLab. They learned the principles of virtual reality, modeling and programming.	Workshop, Virtual reality, Modeling, Programming	Webpage	Free		Openlab	https://openlab.si/2018/10/03/delavnica-unity-3d/	Outdated	Slovenian	2018	To be estimated	Text
28	Industry 4.0	VR / AR / MR / XR	Workshop for virtual reality	A workshop for vocational student was taken place. They created new virtual worlds and be able to play different roles	Workshop, Virutal reality, Vocational education	Webpage	Free		Project Mladi so za (S)klad	https://www.primorski.eu/trzaska/delavnica-virtualne-resnicnosti-za-visjesolke-in-visjesolce-ML519086	Outdated	Slovenian	2020	4	Text
29	Industry 4.0	VR / AR / MR / XR	Effects of the use of smart glasses on eyesight	Effects of using smart glasses on users comfort during order picking activities were researched in a testing environment.	Human-system integration, Smart glasses, Industry 4.0	Report	Free	Free under conditions	Springer, Cham	https://link.springer.com/chapter/10.1007%2F978-3-030-27928-8_123	Contemporary	English	2019	To be estimated	Text
30	Industry 4.0	VR / AR / MR / XR	Virtual and agumented reality technologies as tool for presenting new ideas and prodcuts at fairs: case MAHEPA	Paper is describing attempt to create a virtual presnetation of new hybrid aircraft.	Augmented reality, Virtual reality, virtual exhibits	Report	Free	Free under conditions	Kolomanič S., Markšel M., Mongus D., Žalik B.	https://plus.si.cobiss.net/opac7/bib/35996419	Contemporary	Slovenian	2020	To be estimated	Text, pictures
31	Industry 4.0	VR / AR / MR / XR	Navidezna resničnost (Modul A)	The course addresses the interaction between a human and a computer-generated virtual environment.	University, Subject, Virtual reality	Complete blended learning course	Free	Free under conditions	Univerza v Ljubljani Fakulteta za elektrotehniko	https://www.fe.uni-lj.si/en/education/1st_cycle_academic_study_programme/electrical_engineering/subjects/2009011210474545/	Contemporary	Slovenian	2020	6	5	Text
32	Industry 4.0	VR / AR / MR / XR	Game technology and virtual reality	They relate to the appropriate hardware, user interface design, interactive stories, audio-visual content and more.	University, Subject, Virtual reality, Games	Complete blended learning course	Free	Free under conditions	Univerza v Ljubljani Fakulteta za računalništvo in informatiko	https://www.fri.uni-lj.si/sl/predmet/63740	Contemporary	Slovenian	2020	6	6	Text
33	Industry 4.0	VR / AR / MR / XR	Augmented reality as infrastructure for improvement of communication in construction projects	The thesis studies how to address this problem with Augmented Reality.	Thesis, Augmented reality, Project documentation, BIM	Report	Free	Free under conditions	Faculty of Civil and Geodetic Engineering	https://repozitorij.uni-lj.si/IzpisGradiva.php?id=50946&lang=eng	Outdated	Slovenian	2014	To be estimated	Text
34	Industry 4.0	VR / AR / MR / XR	Digital UL - with innovative use of ICT to excellence	Develop innovative learning environments and introduce methods and pedagogical practices by integrating new technologies	Course, University, Project, ICT	Webpage	Free		Digital UL	https://www.uni-lj.si/o_univerzi_v_ljubljani/projekti/proje ksi_2014_2020-/s_inovativno_uporabo_ikt_do_odlicnosti/	Outdated	Slovenian	2020	To be estimated	Text
35	Industry 4.0	VR / AR / MR / XR	Smart Augmented and Virtual Reality Marketplace for Furniture Customisation	The FurnIT-SAVER project will solve some problems making the use of virtual and augmented reality technologies, recommendation engines based on artificial intelligence and ecommerce solutions to produce a smart marketplace for furniture customisation.	App., Platform, Visualising, VR, AR	Webpage	Free		EURECAT	https://furnit-saver.cenfim.org/	Contemporary	English	2014	To be estimated	Video, app.
36	Industry 4.0	Furniture	Tylko app.	See your shelf live in your space before you decide to buy it. Edit size, height and style on the fly. Furniture shopping with the powerful Tylko app always means a perfect fit.	AR, Furniture, app., Store	Webpage	Free		Tylko	https://tylko.com/	Contemporary	English		To be estimated	App.

No	Category	Subcategory	Title	Description	Description 2	Tags	Type	Price	Conditions	Provider	URL	Language	Year	Status	Cost	Format
37	Industry 4.0	Furniture	Virtual tour of showroom	Discover the latest King Living designs and luxury materials, learn about the benefits of King Living's steel frame and shop the full collection, all from the comfort of your home.			Virtual tour, Showroom, VR, Furniture	Webpage	Free		KING	https://www.kingliving.com.au/showroom-virtual-tour	English		Contemporary	To be estimated	Virutal tour, website
38	Industry 4.0	Furniture	IKEA Place	Spark ideas to create a better life at home. IKEA Place lets you virtually place true-to-scale 3D models in your very own space. Combining the latest AR technology and IKEA's smart home solutions you can experience IKEA like never before			AR, Furnishing, Smart home, App.	Webpage	Free		Inter IKEA Systems B.V.	https://apps.apple.com/us/app/ikea-place/id1279244498	English		Contemporary	To be estimated	App.
39	Industry 4.0	Furniture	Myty	MYTY, the most powerful AR decoration tools to redesign your home. Redecorate your interior, enjoy thousands of inspirational images and test the furniture of your favorite brands, easily with your smartphone.			AR, Furnishing, App., Decoration tools	Webpage	Free		Myty	https://myty.app/en	English		Contemporary	To be estimated	App.
40	Industry 4.0	Furniture	Summit furniture	Summit offers 3D virtual tour of their showrooms.			VR, Virtual tour, Showroom, Products	Webpage	Free		Summit	https://www.summitfurniture.com/	English		Contemporary	To be estimated	Virutal tour, website
41	Industry 4.0	VR / AR / MR / XR	Interior define	Interior defines app. let customer virtually place their products 3D models in to their own space.			AR, Furnishing, App., Decoration tools	Webpage	Free		Interior define	https://www.interiordefine.com/	English		Contemporary	To be estimated	App.
42	Industry 4.0	Furniture	3D Product Visualization Made Easy	The 3D product visualization platform for furniture. Create Photorealistic Content at Scale. Product images and 3D content for a delightful shopping experience.			Platform, 3D, Virtual, Furniture, Content creation, AR	Webpage	Free		Cylindo	https://www.cylindo.com/platform-overview/3d-content-creation/	English		Contemporary	To be estimated	Platform
43	Industry 4.0	VR / AR / MR / XR	All-in-One Augmented Reality System	The ViewAR System lets developers, and inexperienced creators, use cutting-edge AR technologies to create immersive AR experiences across a broad range of domains			Platform, Assistance, Product visualization, AR	Webpage	Free		ViewAR	https://www.viewar.com/	English		Contemporary	To be estimated	Platform, App.
44	Industry 4.0	Furniture	The Virtual Experience Company	Nextech AR Solutions is a leader in web based augmented reality for ecommerce, advertising and virtual events with technology ranging from simple 3D images to complex holograms.			Platform, 3D, Virtual, Furniture, Content creation, AR	Webpage	Free		NexTech AR Solutions Inc.	https://www.nextechar.com/	English		Contemporary	To be estimated	Platform, App.
45	Industry 4.0	Furniture	The Future of Furniture Retail	Allow customers to preview your furniture in their home with Augmented Reality. Improve purchase confidence and increase sales.			Platform, 3D, Virtual, Furniture, Content creation, AR	Webpage	Free		INHAABIT	https://inhaabit.com/augmented-reality-furniture/	English		Contemporary	To be estimated	Platform, App.
46	Industry 4.0	Furniture	The platform for 3D and augmented reality product visualization	Easily deploy mobile augmented reality solutions for eCommerce, field sales, education and more.			Platform, 3D, Virtual, Furniture, Content creation, AR	Webpage			Augment	https://www.augment.com/	English		Contemporary	To be estimated	Platform, App.
47	Ambient Assisted Living	E-literacy of elderly	Computer literacy of older adults	Teaching eldery about basics of internet and ICT	How can internet make everyday life easier.		Eldery, ICT, Internet, Course	Webpage	Free		Ljudska univerza Kranj, Erasmus+	https://epale.ec.europa.eu/sl/blog/rasun alnisko-opismenjevanje-starejsih-odraslih	Slovenian	2014	Outdated	To be estimated	Text
48	Ambient Assisted Living	E-literacy of elderly	Simbioza	They offer many group and individual gorm of non-formal education, which helps overcoming the fear of technology.	Intergeneration project in Slovenia. They offer lifelong learning, with multiple courses.		Eldery, Course, Lifelong learning	Webpage	Free		Simbioza Genesis	https://simbioza.eu/starejsi	Slovenian	2011	Contemporary	To be estimated	Text
49	Ambient Assisted Living	E-literacy of elderly	Active aging and e-literacy of the eldery	Course was presenting imporance and guidelines for teaching eldery computer skills to non-governmental organizations	Course for importance and guidelines for teaching eldery.		Eldery, Computer, guidelines	Complete blended learning course	Free	Free under conditions	Slovenska univerza za tretje življensko obdobje	https://arhiv.acs.si/vabila/Dejavno_stara nje_in_e-opismenievanje_starejsih.pdf	Slovenian	2012	Outdated	To be estimated	Text
50	Ambient Assisted Living	E-literacy of elderly	Digital literacy for adults Expert basis for program preparation	Development of professional materials, programs and approaches in innovative learning environments	Development of digital literacy programs.		Digital literacy, Eldery, professional material	Webpage	Free		Andragoški center Slovenije	https://pismenost.acs.si/wp-content/uploads/2018/06/Strokovne-podlage-za-pripravo-programa-DP.pdf	Slovenian	2016	Contemporary	To be estimated	Text, Picture
51	Ambient Assisted Living	E-literacy of elderly	Computer literacy of the eldery	The course was ment for teaching eldery basics of Windows, text editing and basics of Internet.	Learning the basics of Windows and text editing.		Eldery, Digital literacy, Course	Webpage	Free		Prostovoljno gasilsko društvo Črešnjevec	http://www.gadcresnjevec.si/zdravo-in-aktivno-podezelje/racunalnisko-opismenievanje-starejsih/	Slovenian	2021	Outdated	To be estimated	Text, Picture
52	Ambient Assisted Living	E-literacy of elderly	Computer course	Learning basic computer skills - from turning the computer on and off to Google search engine and sending e-mails.	Learning basic computer skills.		Computer, Basics, Eldery	Complete blended learning course	Free	Free under conditions	Doba	https://www.doba.si/dogodki/racunalnis ka-delavnica-1	Slovenian	2019	Outdated	To be estimated	Text
53	Ambient Assisted Living	E-literacy of elderly	Subsidized courses for advanced computer work and greater personal work success	Free courses for employees in the earea of municipalities of Grosuplje and Dobrepolje: AutoCAD, Word, Excel, Clod.	Learning advanced computer knowlage		Computer, Advanced, Software, Employee	Complete blended learning course	Free	Other	Agora d.o.o.	https://racunalniske-novice.com/brezplacne-delavnice-za-napredenejse-delo-z-racunalnikom-in-vecji-osebni-delovni-uspeh/	Slovenian	2012	Outdated	To be estimated	Text
54	Ambient Assisted Living	E-literacy of elderly	Computer literacy for employees - RPO	A course is designed for employees over 45 years of age and older who are new to the computer.	Learning basic computer skills		Computer, Employee	Webpage	Free		Ljudska univerza Ajdovščina	https://www.lu-ajdovscina.si/racunalnisko_opbrazevanje/2015070709320960/racunalniska_pism enost_za_zaposlene_rpo/	Slovenian	2021	Contemporary	To be estimated	Text
55	Ambient Assisted Living	Smart home	Event for SRIP Smart Buildings and Home with Wood Chain	As part of the renewal of the Slovenian Smart Specialization Strategy (S4) for the programming period 2021-2027, SVRK is organizing online courses and the support of Strategic Partnerships (SRIP)	How will the content of the Slovenian Smart Specialization Strategy (S4) for the programming period 2021–2027 be formulated? What are and will be its priority areas, focus areas and product directions?		Smart home, Discussion, Project	Webpage	Free		SRIP	https://www.tecos.si/sl/objave-srip/sedmje-objave-srip/vabilo-na-spletne-delavnice-za-prenovo-s4-2021-2027.html	Slovenian	2021	Contemporary	To be estimated	Text
56	Ambient Assisted Living	Smart home	Fibaro	Webiste of the company where they have displayed and described their products and solutions.	Research of the market. What is existing in practice		Smart home, Products, Company	Webpage	Free		Fibaro	https://www.fibaro.com/en/	English		Contemporary	To be estimated	Text, pictures
57	Ambient Assisted Living	Smart home	VIA – Smart home – Connected Home	Presentation of their products and sofware for smart home.	By using demo software customers can see how is it to have and to use smart home.		Software, Smart house, Company	Webpage	Free		Andivi	https://www.andivi.si/via-pametna-hisa-pametni-dom/	Slovenian	2019	Contemporary	To be estimated	Text, pictures, software
58	Ambient Assisted Living	Smart home	Smart home for everyone	Guide for DIY smart home.	Guide will show you tricks and ways how to make your home smart for low price.		Smart home, DIY, Guide	Webpage	Free		Monitor.is	https://www.monitor.si/clanek/pametna-hisa-za-vsakogar/191659/	Slovenian	2021	Contemporary	To be estimated	Text, Pictures
59	Ambient Assisted Living	Smart home	Course - world of tech. with GOAP smart house	Lecture about smarthouse and course about basics of smart house programming.	What is a smart house. How to set up and operate a smart home with a smartphone. What a smart house can do for me? Creative challenge - from ideas to a new product.		Smart home, course, Programing	Complete online course	Free	Other	e-hiša	https://www.e-hisa.si/kreativna-delavnica-svet-tehnike-s-pametno-hisko-podjetja-goap/	Slovenian	2021	Outdated	To be estimated	Text
60	Ambient Assisted Living	Smart home	SHVET - SmartApp Network	SHVET brings together VET and HVET providers, research institutions, national agencies for VET and representatives of SMEs in order to deliver a new joint qualification between Croatia, Slovenia and Italy.	The aim the SmartAppNetwork is to establish a strong and broad partnership of employers for further sustainable implementation of the new joint curriculum of the Expert for Building Automation.		SmartApp, Network, Smart building, Project	Webpage	Free		SHVET	https://www.smart-hvet.eu/	English	2021	Contemporary	To be estimated	App.
61	Ambient Assisted Living	Blockchain	Delivering blockchain skills for Europe	CHAISE is a Sector Skills Alliance financed by the Erasmus+ programme. Our core mission is to develop a strategic approach on blockchain skills development for Europe as well as to deliver future-proof training solutions, in order to tackle blockchain skill shortages and to respond to the current and future skill needs of the European Blockchain workforce.	The project will deliver appropriate and future-proof training solutions, mobility schemes and qualifications, further increasing the attractiveness of the sector, especially for young Europeans.		Project, blockchain, Skills strategy	Webpage	Free		CHAISE	https://chaise-blockchainskills.eu/	English	2020	Contemporary	To be estimated	Text, pictures
62	Circular economy	Furniture	SAWYER: holistic approach for the identification of Skills and safety needs towards a growing sustainability & circularity of furniture sector	The SAWYER project aims to facilitate the transition of European furniture companies to a more circular economy. The project will study the main legislative and voluntary instruments that can facilitate this circular economy transition and it will analyse how they are expected to affect and transform the European furniture sector in 2030 (2 years, 01/03/2019 – 28/02/2021). This project has been funded by the European Commission call: Support for Social Dialogue VP/2018/001 – Grant Agreement Reference VS/2019/0027.			Circular Economy, Skills needs, Safety needs	Webpage	Free	Free under conditions	SAWYER Consortium	Project website: https://circularfurniture-sawyer.eu/project/ Download section: https://circularfurniture-sawyer.eu/downloads/	English	2020	Contemporary	To be estimated	PDF, video, PPT
63	Circular economy	Furniture	'Circular Economy in the Furniture Sector: Overview of Current Challenges and Competence	This report provides an overview on how the circular economy is currently being implemented within the furniture sector. By focusing on existing practices, challenges and opportunities at the micro-level, the main objective of this report			Circular economy, furniture	Report	Free	Free under conditions	FURN360 - Institution: CETEM	Webpage: https://circulareconomy.europa.eu/platform/sites/default/files/circular-...	English	2019	Contemporary	To be estimated	Text (pdf)
64	Circular economy	General	Universal circular economy poolicy goals. Enabling the transition to scale.	This paper sets out five universal circular economy policy goals around which governments and businesses can align to achieve their common objectives. Applicable across sectors and local contexts, these policy goals can – working in conjunction – help governments build healthier economic recoveries and lower the cost of transition for business.			Policy goals, Circular economy,	Report	Free	Free under conditions	Ellen MacArthur Foundation	https://emf.thirdlight.com/link/kt00azui bf96-qt2800/@/preview/1?o	English	2021	Contemporary	To be estimated	Text (pdf)

#	Topic	Sector	Title	Description	Knowledge/Skills/Competences	Keywords	Type	Price	Conditions	Author/Institution	Link	Language	Year	Period	EQF/Level	Duration	Format
65	Circular economy	Furniture	Circular economy opportunities in the furniture sector	This report was commissioned by the European Environmental Bureau (EEB) to contribute towards the debate in Europe around the challenges and opportunities for transitioning towards a circular furniture sector. The intended audience for the study findings includes policy makers and key actors across the furniture value chain.		Circular economy, furniture	Report	Free	Free under conditions	Editor responsible: Stephane Arditi European Environmental Bureau (EEB)	https://eeb.org/library/circular-economy-opportunities-in-the-furniture-sector/	English	2017	Contemporary	To be estimated		Text (pdf)
66	Circular economy	Furniture	The Furniture Sector and Circular Economy 2.0	EFIC, the European Furniture Industries Confederation, has identified a number of challenges and opportunities linked to the transition to a circular economy, covering the different phases of furniture manufacturing, from the supply of materials to the end of life phase, and is hereby providing sector specific expertise for EU Circular Economy policies. The European furniture industries are ready to collaborate with EU institutions to create suitable tools for the sector, enabling the industry to move into the right direction.		Circular economy, furniture	Report	Free	Free under conditions	European Furniture Industries Confederation	https://circulareconomy.europa.eu/platform/sites/default/files/efic_position_-_the_furniture_sector_and_circular_economy_2.0.pdf	English	2021	Contemporary	To be estimated		Text (pdf)
67	Circular economy	Furniture	FURN360 Module 1: Circular Economy : An Introduction	This first module sets the scene for the entire training and introduces the concept of the circular economy, an economy in which the value of products, materials and resources is retained for as long as possible, and waste generation is minimised. It explains why the circular economy has emerged in recent years as a solution to urgent challenges. This first module is developed around 5 different units. 1.1 LIMITS TO LINEAR ECONOMY: WHAT IS WRONG WITH OUR CURRENT SYSTEM? 1.2 DEFINITION AND PRINCIPLES OF CIRCULAR ECONOMY 1.3 ADVANTAGES AND BARRIERS OF THE CIRCULAR ECONOMY 1.4 CIRCULAR ECONOMY SCHOOLS OF THOUGHTS (C2C, BIOMIMICRY, INDUSTRIAL ECOLOGY, FUNCTIONAL ECONOMY) 1.5 SUSTAINABILITY AND CIRCULAR ECONOMY: COMPREHEND HOW CIRCULAR ECONOMY IS RELATED TO SUSTAINABILITY	**Knowledge :** •The trainee can list all the limits associated to the linear economy. •The trainee understands the different principles associated with circular economy. •The trainees can list advantages and barriers to the implementation of a circular economy. •The trainee can apprehend the different schools of thoughts associated with the concept of circular economy. •The trainee understands that circular economy is based on a variety of existing concepts related to sustainability. •The trainee is able to understand how circular economy and sustainability inter relate. **Skills:** •The trainee knows where to place certain circular economy business examples in the circular economy butterfly diagram. **Competences:** •The trainee can compare circular with linear principles.	Circular Economy	Complete online course	Free		FURN360 - Institution: CETEM	E-Learing Platform (Registration required): https://training.furn360.eu/	English	2019	Contemporary	4	0.26	Text (pdf), PPT, Videos, Infographic, Quizz
68	Circular economy	Furniture	FURN360 Module 2. Circular Economy in the furniture industry	In this second module, the main characteristics of the furniture sector that can affect the implementation of the circular economy in this sector are discussed.	**Knowledge:** •Recognize the current situation of the European Furniture sector in relation to the Circular Economy.	Circular Economy / Furniture Industry	Complete online course	Free		FURN360 - Institution: CETEM	E-Learing Platform (Registration required): https://training.furn360.eu/	English	2019	Contemporary	4	0.46	Text (pdf), PPT, Videos, Infographic, Quizz
69	Circular economy	Furniture	FURN360 Module 3. Circular business model innovation in the furniture industry	In this third module, the circular economy is approached from a business point of view. With this module, participants will take a broader view of what it means to	**Knowledge:** •Understand the concept of business model. •Understand the characteristics of a sustainable business model. Recognize sustainability as a driver for business model innovation.	Circular Economy / Furniture Industry / Circular Business Model	Complete online course	Free		FURN360 - Institution: CETEM	E-Learing Platform (Registration required): https://training.furn360.eu/	English	2019	Contemporary	4	0.5	Text (pdf), PPT, Videos, Infographic, Quizz
70	Circular economy	Furniture	FURN360 Module 4. Business management in the circular furniture industry	This module discusses the tools and applications currently used to promote sustainability in the circular furniture industry. This fourth module is developed around 5 different units: 4.1 CREATING AND MANAGING CIRCULAR VALUE NETWORKS 4.2 ENTREPRENEURSHIP FOR CIRCULAR ECONOMY	**Knowledge:** •Understand the need for collaboration with value network to fully exploit shared. •Recognize the features of entrepreneurship mindset. **Skills:** •Personally implement tools and methods to develop and evaluate ideas of circular innovation.	Business Management / Circular furniture Industry	Complete online course	Free		FURN360 - Institution: CETEM	E-Learing Platform (Registration required): https://training.furn360.eu/	English	2019	Contemporary	4	0.32	Text (pdf), PPT, Videos, Infographic, Quizz
71	Circular economy	Furniture	FURN360 Module 5. Sustainability in the circular furniture industry	This module introduces some of the main tools and applications that are currently used to promote sustainability in the furniture industry, becoming essential tools for the transformation towards a circular industry model.	**Knowledge:** •Understand what is ecodesign, its different stages, what it provides to a company. •Legal requirements of a furniture company. Basic aspect of different certifications of Quality and Environment management for companies: ISO 9001, ISO	Sustainability / Circular Furniture Industry	Complete online course	Free		FURN360 - Institution: CETEM	E-Learing Platform (Registration required): https://training.furn360.eu/	English	2019	Contemporary	4	0.5	Text (pdf), PPT, Videos, Infographic, Quizz
72	Circular economy	Furniture	FURN360 Module 6. Marketing the circular furniture	In this module, a marketing perspective on the circular economy is adopted. The aim is to delve into the different marketing concepts, models and tools that can be used to help deliver circular products in the markets. This module is composed of three units: 6.1 CIRCULAR PRODUCT TO MARKETS 6.2 CIRCULAR CUSTOMER VALUE CREATION 6.3 CIRCULAR FURNITURE CONSUMPTION PRACTICES	**Knowledge:** •Identify and describe the 4ps for circular economy. •Understanding consumers concerns on sustainability. •Identify consumer routines or mundane use of furniture. Identify consumption communities from sustainability point of views. **Skills:** •Recognize the most relevant strategy to meet customer needs with circular products. **Competences:** •Use Relationship marketing theory to necessary to acquire and retain customers. •Develop transformative consumption practices for furniture product/services.	Marketing / Circular Furniture	Complete online course	Free		FURN360 - Institution: CETEM	E-Learing Platform (Registration required): https://training.furn360.eu/	English	2019	Contemporary	4	0.46	Text (pdf), PPT, Videos, Infographic, Quizz
73	Circular economy	Furniture	FURN360 Module 7. Supporting by advanced Key Enabling Technologies	Module 7 will introduce you to some of the new technologies used as transversal tools in the circular economy, and how these technologies can contribute to the optimisation of the circular economy in most processes. This module is divided into 6 units: 7.1 STATE OF THE ART OF SPECIFIC KETS WITHIN THE CIRCULAR ECONOMY. 7.2 AUGMENTED REALITY 7.3 3D PRINTING OR ADDITIVE MANUFACTURING 7.4 3D SCANNING 7.5 TRACKING SYSTEMS 7.6 DIGITAL COLLABORATIVE PLATFORMS	**Knowledge:** •Understand, recognize and analyze the use of KETs in the furniture industry and its possible applications to the circular economy model. •Recognize the uses of Augmented Reality in the furniture production chain, from the design to the final piece. Know how AR works. •Have a complete understanding of the technology and its applications to the principles of the circular economy. •Know and understand the process of 3D scanning and the concept of reverse engineering and how it can be used in the furniture and wood sector. •Know what is a tracking system, which technologies are behind and their applications in the furniture and wood sector. •To know what are the collaborative digital platforms and possible uses within the circular economic model. **Skills:** •Create connections between technology and the circular economy. Identify new applications. Creative thinking. •Identify the uses of AR in the circular model. Constructive thinking. •Identify the different uses of 3D printing in the furniture industry and market. Integration of ecodesign in additive manufacturing. •Constructive thinking. Optimization of resources through 3D scanning. Critical analysis. •Evaluate and analyze the uses of the tracking system applied to the furniture sector to connect them with the principles of CE •Critical thinking. •Analyse and justify the uses of these platforms in the EC through the knowledge acquired. •Competences: **Competences:** •Be able to identify the usability of KETs and its advantages in the Circular Economy within the Furniture Sector. •Be able to evaluate and analyse the resources offered by the AR to be able to connect them to the principles of CE •Be able to apply these uses and processes to the circular economic model. •Recognize the possible uses and benefits of this technology both in the production process of furniture and in the first transformation of wood. •Be able to understand the organization and use of tracking systems, and recognize their applications in the circular economy. •Be able to use collaborative digital platforms to meet the needs of the principles of the circular economy.	Circular Economy / KETs	Complete online course	Free		FURN360 - Institution: CETEM	E-Learing Platform (Registration required): https://training.furn360.eu/	English	2019	Contemporary	4	0.52	Text (pdf), PPT, Videos, Infographic, Quizz
	Industry 4.0	General	industrie 4.0	elearning about the basic 'need-to-knows' in Industry 4.0	Industrie 4.0 omvat alle nieuwe technologieën: van virtual reality, over cybersecurity tot internet of things. In deze online cursus leer je de nieuwe technologieën kennen. Je leert hoe industrie 4.0 alle stappen in de waardeketen beïnvloedt: verlangen, bestellen, produceren, leveren, gebruiken en hergebruiken. Je ontdekt ook hoe deze nieuwe trends jou kunnen ondersteunen in je job.	VDAB, industry 4.0, general,	Complete online course	Free	Free under conditions	VDAB	https://www.vdab.be/opleidingen/aanbod/O-AMI-800907/cursus/C-AMI-191221/Industrie_4_0-online	Dutch	2021	Contemporary	3	5h	totara, online learning-platform by VDAB Text, Videos, animations, Infographic, Quizz
	Circular economy	Management	circulair ondernemen	elearning about the basic 'need-to-knows' in circular entrepeneuring	In begrijpelijke taal met animaties en oefeningen, komen deze 7 technologische drijfveren van industrie 4.0 aan bod: big data & data-analyse; additive manufacturing; internet of things; augmented & virtual reality; cyber physical systems; digital twin; sensortechnologie; cybersecurity Je maakt kennis met het circulair ondernemerschap en leer je laten inspireren door de vele getuigenissen en voorbeelden van collega-ondernemers die de transitie naar circulair ondernemerschap gemaakt hebben. Circulair ondernemen is de toekomst. En nu is het momentum om er op in te zetten. Schrijf je dus snel in voor deze interactieve cursus en ontdek er alles over.	VDAB, circular economy, general,	Complete online course	Free	Free under conditions	VDAB	https://www.vdab.be/opleidingen/aanbod/O-AMI-801047/cursus/C-AMI-195223/Circulair_ondernemen-online	Dutch	2021	Contemporary	3	5h	totara, online learning-platform by VDAB Text, Videos, animations, Infographic, Quizz
	Industry 4.0	Management	EQ-WOOD - European Quality Qualification for the WOODwork and furniture industry	MOOC developed in the frame of Erasmus+ programme, aiming to train the new profile of the Innovation Advisor for the Furniture sector	Deze opleiding is het resultaat van een samenwerking tussen Syntra en VDAB. Five interactive and multimedia Units: - Design Thinking / Concepting / Prototyping - Innovation / Innovation Management - Design Trend and Innovation Research - Project Management - Professional development, networking and intercultural skill	MOOC, innovation, trendwatching, furniture, management	Complete, blended learning course	Free	Free under conditions	EQWOOD Project Consortium	https://www.eqwood.org/elearning	English (with English subtitles)	2021	Contemporary	5	total effective content duration of 38,55 hours and estimated learners' duration of 77,50 hours (additional materials included).	EQWOOD Project e-learning multimedia platform
	Industry 4.0	Other specific	Industry 4.0	Introduction to industry 4.0 and its current status in the furniture sector. Listing of technologies in the sector. Autodiagnosis tools for digital transformation in the sector: 1. Introduction to I4.0 1.1 What is industry 4.0? 2. Industry 4.0 in the Furniture Sector 2.1 Industry 4.0 in the furniture sector. Current state 2.2 Implementing "Hybridization between Physics and the Digital world" technologies in the furniture sector. Current Stage 2.3 Implementation of Telecom-data technologies and management systems-collaborative platform	**Knowledge** - Knows the concept of Industry 4.0 and its Key Enabling Technologies (KETs) under its umbrella. - Know the concept of smart factory - Know the current state (2018-2019) of the furniture and wood sector regarding digital transformation - Know the exitance of technologies that allow hybridisation between the physical and digital worlds in the furniture sector - Know the exitance of technologies for communication and data treatment - Know the exitance of tools for management of the business and collaborative platforms **Skills** - Knows the concept of Industry 4.0 and its Key Enabling Technologies (KETs) under its umbrella. - Know the concept of smart factory - Know the current state (2018-2019) of the furniture and wood sector regarding digital transformation - Know the exitance of technologies that allow hybridisation between the physical and digital worlds in the furniture sector - Know the exitance of technologies for communication and data treatment - Know the exitance of tools for management of the business and collaborative platforms **Competences** - Move to next steps to go deeper in concepts of Industry 4.0 and its Key Enabling Technologies (KETs) under its umbrella for the furniture sector. - Move to next steps for digital transformation in the furniture sector.	Industry 4.0	E-Learning Platform	Free	The present work, produced by the IN4WOOD Consortium, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License	IN4WOOD - Institution: CETEM	E-Learing Platform (Registration required): https://app.in4wood.eu/login	English - German - Italian - Spanish	2018 / 2019	Contemporary	EQF Level - 5		Link to to E-Learning Platform https://app.in4wood.eu/login Text (pdf), PPT, Videos

Industry 4.0	Other specific	3D Printing and Additive Manufacturing for Furniture Manufacturing	The additive manufacturing course is structured in two parts. The first introduces the user to the technology, giving an overview of 3D printing and how it works, as well as showing the production process of a 3D printed product. In the second part, it is detailed how to use this technology in the wood and furniture sector, explaining some of its most relevant uses in this field. Reference is also made to the commercial and design benefits that the furniture sector can derive from additive manufacturing. 1. Introduction to 3D printing and Additive Manufacturing 1.1 What is Additive Manufacturing? 1.2 Technologies FDM vs SLA 1.3 Production process in 3D printing. Obtaining the digital model. 1.4 Production process in 3D printing. Extracting pieces. 1.5 What is Rapid Prototyping? 1.6 What are support structures in AM? 1.7 Production process in 3D printing. Exporting the STL file. 1.8 Production process in 3D printing. Post Processing. 1.9 3D printing technologies. Overview. 1.10 Model Infill 1.11 Production process in 3D printing. Slicing the STL file. 1.12 Main software used in 3D printing. 1.13 What are STL and G-Code. 1.14 How does 3D printing work? 1.15 Production process in 3D printing. 3D printing. 1.16 Key design consideration for 3D printing with FDM. 2. Application of 3D printing in the Furniture sector 2.1 Design in the furniture sector with 3D printing. 2.2 Prototyping in the furniture sector with 3D printing. 2.3 Moulds for Prototyping and final products. Rapid Tooling.	**Knowledge** - Steps to follow since you get the 3D model up to the printed piece. - Influence of additive manufacturing on the design and prototyping of a product. - Application of additive manufacturing for the production of pre-mold or molds for short series. - Competitiveness of additive manufacturing in the production sector. - How 3D printing is being used in the furniture market. **Skills** - Obtaining and printing a 3D object. - Be able to identify what is printable or not. - Knowing what types of software are needed for each step of the 3D printing process. - Recognize what types of pieces of furniture can be printed in 3D. - Be able to increase the added value of the product through this technology. - Knowing when and how to use rapid tooling. - Identify the different uses of 3D printing in the furniture market. **Competences** - Ability to make decisions within the printing process. - Analyze the part before printing. - Ability to adapt the prototype to the specifications of the customer. - Analyze the production and be able to improve costs and times in the production process. - Ability to work with hybrid technology (Pieces of wood assembled with 3D printing parts). - Analyze and optimize the design for 3D printing, adapting it to market trends.	3D Printing / Additive Manufacturing / Furniture Manufacturing	E-Learning Platform	Free	The present work, produced by the IN4WOOD Consortium, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License	IN4WOOD - CETEM	Institution: E-Learing Platform (Registration required): https://app.in4wood.eu/login	English - German - Italian - Spanish	2018 / 2019	Contemporary	EQF Level - 5		Link to te E-Learning Platform https://app.in4wood.eu /login	Text (pdf), PPT, Videos
Industry 4.0	Other specific	Augmented Reality and Intelligent Tools that may be Used During the Design and Fabrication of the Product	This course deals with Augmented Reality. It is structured in two parts. The first introduces the user to the technology, giving an overview of what Augmented Reality is and how it works. In the second part, we will go into more detail on how to use this technology in the wood and furniture sector, explaining some of its most relevant uses in this field. References are also made to the commercial benefits that the furniture sector can gain thanks to Augmented Reality. 1. Introduction to Augmented Reality 1.1 What is Augmented Reality? 1.2 Differences between AR and Virtual Reality 1.3 What is QR? 1.4 How AR works? 1.5 Types of AR-QR Markers 1.6 Types of AR - GPS 1.7 Augmented reality applications 1.8 Different types of Augmented Reality and Virtual Reality devices 2. Application of the Augmented Reality during the design and fabrication stage of the product 2.1 Ways in which Augmented Reality will revolutionize the Furniture sector – In industry and production 2.2 Ways in which Augmented Reality will revolutionize the Furniture sector From the employee to the consumer 2.3 How AR can improve the creation of furniture - Design 2.4 How AR can improve the creation of furniture - Prototyping 2.5 Augmented Reality for industrial maintenance. 2.6 Vision Picking with Augmented Reality 2.7 Training for Workers with Augmented Reality 2.8 Assembly and part recognition. Monitoring with AR 3. Commercial Aspects	**Knowledge** - Understands the functioning of augmented reality and its differences with virtual reality. - Influence of Augmented Reality on the design and prototyping of a product. - Uses of Augmented Reality throughout the production chain of furniture, from the design to the final piece. - How Augmented Reality is being used in the furniture market. **Skills** - Define and determine what Augmented Reality is and how it works. - Identify the elements needed to create Augmented Reality. - Recognize the different uses of augmented reality in the production chain. - Start working with this technology within a company. - Know how AR can reducing costs and times in the production process of a furniture. - Identify the different uses of Augmented Reality in the furniture market. **Competences** - Identify programs used in Augmented Reality. - Recognize the different types of Augmented Reality. - Adapt the prototype to the specifications of the customer through the use of AR. - Analyze the production and improve costs and times in the production process. - Understand the new way of work with AR. - Analyze and optimize the design, adapting it to market trends.	Augmented Reality / Intelligent Tools	E-Learning Platform	Free	The present work, produced by the IN4WOOD Consortium, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License	IN4WOOD - CETEM	Institution: E-Learing Platform (Registration required): https://app.in4wood.eu/login	English - German - Italian - Spanish	2018 / 2019	Contemporary	EQF Level - 5		Link to te E-Learning Platform https://app.in4wood.eu /login	Text (pdf), PPT, Videos
Industry 4.0	Other specific	Sensors and Wearables	The goal of this course is to introduce the concepts of sensors and wearables, their main features and their use in the industry. The course also includes different use cases focused on business successful stories. Finally, the course tries to give a general view about the future of sensors in the smart factories. 1. Introduction 1.1 Sensors. What are they? How are they classified? 2. Main Characteristics 2.1 Intelligent sensors for Industry 4.0 3. Types 3.1 Types of intelligent sensors 3.2 Wearables 3.3 Wearables: augmented reality glasses and Smart watches 4. Use Cases and Business Success stories 4.1 Use cases of intelligent sensors and wearables in Industry 4.0 5. Future of Sensors and Wearables in Industry 5.1 Challenges of intelligent sensors and wearables for Industry 4.0 (I) 5.2 Challenges of intelligent sensors and wearables for Industry 4.0 (II)	**Knowledge** • Understand what sensors and wearables are and how they work. • Know about the context of sensors and wearables in the industry and their main characteristics. • Acquire knowledge about different types of those sensors and wearables widely used in the industry. • Know about different use cases of sensors and wearables, mainly focused on industrial scenarios. • Know about real business success stories, how sensors and wearables have improved an industrial facility on industrial process. • Know the future of sensors and wearables in industry. **Skills** • Define what sensors and wearables are. • Enumerate the main characteristics of sensors and wearables. • Identify the operation modes of sensors and wearables and their sues in different industrial scenarios. • Distinguish among different types of sensors and wearables, according their characteristics, operation mode or use. • Recognize use cases of sensors and wearables. • Propose uses of sensors and wearables in different industrial sectors. • Identify differences between current and future sensors and wearables. **Competences** • Understand the use of sensors and wearables in different industrial scenarios. • Recognize main characteristics of sensors and wearables. • Analyze and take decisions about the better sensor or wearable to use for a specific purpose, facility, operation mode, etc. • Analyze an industrial scenario in order to identify if the use of sensors and/or wearables could improve the performance of the industrial activity. • Get a sensor or wearable and suggest use cases of it. • Take decisions about the most suitable sensor/wearable for a specific industrial need. • Analyze the future of sensors and wearables and their use cases.	Sensors / Wearables	E-Learning Platform	Free	The present work, produced by the IN4WOOD Consortium, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License	IN4WOOD - CETEM	Institution: E-Learing Platform (Registration required): https://app.in4wood.eu/login	English - German - Italian - Spanish	2018 / 2019	Contemporary	EQF Level - 5		Link to te E-Learning Platform https://app.in4wood.eu /login	Text (pdf), PPT, Videos
Industry 4.0	Other specific	RFID/NFC	The goal of this course is to introduce the RFID and NFC technologies, their main features and examples of their use in the industry. The course also includes different use cases focused on business successes stories. Finally, the course gives a general view about the future of RFID and NFC in the industry 4.0 adoption. 1. RFID 1.1 Introduction to RFID 1.2 Main Characteristics: RFID systems and tags 1.3 Main Characteristics: Readers 1.4 Main characteristics: antennas and middleware 1.5 Operational Modes in RFID 1.6 Standards in RFID 1.7 Privacy and Security in RFID 1.8 Use cases of RFID: traceability, inventory control, healthcare, etc. 2. NFC 2.1 What about NFC? 2.2 NFC: Main characteristics 2.3 Use cases of NFC in the industry 2.4 Future of RFID and NFC in the industry	**Knowledge** • Understand what RFID and NFC Technologies are. • Know about the context of RFID and NFC in the industry • Know the main characteristics of RFID and NFC • Know the different operation modes of RFID and NFC • Acquire knowledge about the standards behind NFC and RFID • Acquire knowledge about different use cases of RFID and NFC focused on factories, traceability, logistic, etc. • Know about real business success stories, about the use of RFID and NFC in industrial facilities and industrial process. • Know the future of RFID and NFC in industry **Skills** • Define what RFID technology is • Define what NFC technology is • Enumerate the main characteristics of RFID and NFC • Enumerate the operation modes of RFID and NFC • Identify the standards of RFID and NFC • Enumerate use cases of RFID and NFC in different industrial sectors. • Identify the advantages of RFID and NFC in an industrial scenario • To provide an analysis about the future of RFID and NFC **Competences** • Understand the use of RFID and NFC in different industrial scenarios. • Recognize main characteristics of RFID and NFC • Analyze and take decisions about the type of RFID and NFC technologies and features fit with an specific use, operation mode or standard • Analyze an industrial scenario in order to identify if the use of RFID and NFC for improving the performance of the industrial activity. • Given a type of RFID or NFC device, to enumerate features of it and suggest use cases in industrial scenarios	RFID / NFC	E-Learning Platform	Free	The present work, produced by the IN4WOOD Consortium, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License	IN4WOOD - CETEM	Institution: E-Learing Platform (Registration required): https://app.in4wood.eu/login	English - German - Italian - Spanish	2018 / 2019	Contemporary	EQF Level - 5		Link to te E-Learning Platform https://app.in4wood.eu /login	Text (pdf), PPT, Videos
Industry 4.0	Other specific	Robotics applied to furniture production at the different production stages	This course aims to provide basic knowledge and methodology for the design and implementation of service robotics solutions based on the integration of mobile robotic platforms, Internet of Things and Cloud computing. These Key Enabling Technologies could be applied to furniture production at the different production stages. The objective is to show an overview of innovative concepts of robotics related to Industry 4.0 which shall be accessible to the specialist in the wood-manufactory field, regardless of their educational background. 1. Introduction 1.1 Introduction to Robotics 2. Definitions and Concepts 2.1 From Industrial robotics to collaborative robotics 2.2 Service Robotics Part I 2.3 Service Robotics Part II 2.4 Internet of Things (IoT) - Introduction and Definition 2.5 Internet of Things (IoT) - Main Concepts and Architecture characteristics 2.6 Internet of Things (IoT) - Key Enabling Technologies 2.7 Internet of Things (IoT) - Application Areas 2.8 Cloud Robotics Definition 2.9 Cloud Robotics Application 2.10 Social and Collaborative Robotics Part I 2.11 Social and Collaborative Robotics Part II 2.12 Social and Collaborative Robotics Part III 2.13 Social and Collaborative Robotics Part IV 2.14 Social and Collaborative Robotics Part V 2.15 Social and Collaborative Robotics Part VI 2.16 Artificial Intelligence (AI) 2.17 Human Activity Recognition (HAR) I 2.18 Human Activity Recognition (HAR) II 3. Practical exercise	**Knowledge** - Characteristics of service robots and limitation of industrial ones. - Requirements to be addressed to program and develop service robots. - Concepts, properties and characteristics of Internet of Things. - Benefits and aim of Cloud Robotics. - Examples, advantages and applications of Artificial Intelligence. **Skills** - Knowing what types of software are needed to analyse the movement of the robot. - Recognizing what tools to be used to enhance the capability of collaborative robots. - Identifying the tools that can be used to help the deployment of collaborative robots in industrial application. - Identifying the different uses of collaborative robotics in industry. **Competences** - Analyze the issues to be considered in a collaborative robots application. - Define and implement the steps for Human Activity Recognition tasks. - Identify the necessary architecture for ZigBee applications. - Analyze which application to be put in Cloud and which one on local pc.	Robotics / furniture production / production stages	E-Learning Platform	Free	The present work, produced by the IN4WOOD Consortium, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License	IN4WOOD - CETEM	Institution: E-Learing Platform (Registration required): https://app.in4wood.eu/login	English - German - Italian - Spanish	2018 / 2019	Contemporary	EQF Level - 5		Link to te E-Learning Platform https://app.in4wood.eu /login	Text (pdf), PPT, Videos

Category	Subcategory	Course	Description / Contents	Learning Outcomes	Title	Type	Cost	License	Institution	Platform	Languages	Year	Period	EQF	Link	Format
Industry 4.0	Other specific	Simulation, modelling and virtualization in the design, virtual catalogues, 3D scanning	The course is designed to understand all the key features of Autodesk 3DS Max software, become self-contained and productive with the advanced Corona Renderer render engine in order to produce static photorealistic renderings. Corona will be the focus of the course along with some advanced lighting, mapping, texturing features of 3ds Max. 1. Introduction; 1.1 Course introduction; 2. Main Concepts; 2.1 Valid tool for companies; 2.2 Panorama of existing softwares; 3. Examples and good practices; 3.1 Case studies; 4. Practical exercises: 3DS MAX; 4.1 3DsMax_ software interface; 4.2 3DsMax_ introduction part 1 / interface overview; 4.3 3DsMax_ introduction part 2; 4.4 3DsMax_ create panel; 4.5 3DsMax_ modify panel part 1; 4.6 3DsMax_ modify panel part 2; 4.7 3DsMax_ modify panel part 3; 4.8 3DsMax_ modify panel part 4; 4.9 3DsMax_ display panel; 4.10 3DsMax_ import (non native files); 4.11 3DsMax_ merge (native max files); 5. Practical exercises: CORONA RENDERER; 5.1 Corona Renderer_ install the render engine; 5.2 Corona Renderer_ how to set corona as main render engine; 5.3 Corona Renderer_ main features	**Knowledge** - Use of 3D modeling techniques in order to correctly represent the contents of the project. - Transferring the design contents expressed by designers into 3D drawings. - Defining presentation rendering of the project to be proposed to the company or the market. **Skills** - Understanding the logic of 3D graphics. - Know which rendering engine is best for yielding desired result in time. - Mastering the balance of shadow and light. - Skills in problem setting / solving. - Knowing what types of software are needed for each step of the 3D rendering process. - Being able to represent any kind of product by using this technology. **Competences** - Ability to make decisions within the rendering process. - Be able to identify the problem within the workflow. - Ability to adapt quality/time of the final rendering to the customer's wishes. - Ability to work in team.	Simulation / modelling / virtualization / virtual catalogues / 3D scanning	E-Learning Platform	Free	The present work, produced by the IN4WOOD Consortium, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License	IN4WOOD - Institution: CETEM	E-Learing Platform (Registration required): https://app.in4wood.eu/login	English - German - Italian - Spanish	2018 / 2019	Contemporary	EQF Level - 5	Link to to E-Learning Platform https://app.in4wood.eu/login	Text (pdf), PPT, Videos
Industry 4.0	Other specific	Internet of Things	This course is divided in six sections. In the first section, the overall concepts of Internet of Things will be described in a relatively theoretical way although, due to its nature, Internet of Things is always at least partially practical. In the second section, the features of Internet of Things will be described, going on with the first section. The third section refers to the technologies directly related to the Internet of Things. The fourth section deals with technologies that, while not being directly Internet of Things, tend to be used in Internet of Things environments and generate added value. In the fifth section, a specific case of open Internet of Things framework will be analysed and the student will learn specifically how to use it to generate a prototype Internet of Things ecosystem - which is the goal of section six. 1. Introduction to IoT; 1.1 What is IoT?; 1.2 Related Concepts; 1.3 How does IoT work?; 1.4 Application of IoT; 1.5 Commercial Aspects; 1.6 Concerns (privacy, security, health, etc.); 2. Features; 2.1 Architecture; 2.2 Intelligence; 2.3 Automation; 2.4 Design; 3. Technologies to IoT; 3.1 The Cloud; 3.2 Wired and wireless networks; 3.3 Cyber-physical systems; 3.4 Technological Standards	**Knowledge** - Understand the meaning of the Internet of Things concept. - Understand the theory behind Internet of Things. - Understand the architectures of Internet of Things. - Learn the technologies of Internet of Things. **Skills** - Learn how to build an Internet of Things architecture. - Learn the differences between Internet of Things technologies. - Design an Internet of Things ecosystem. **Competences** - Know about the theory of Internet of Things. - Understand the features of Internet of Things. - Know the technologies of Internet of Things and the technologies that tend to go with of Internet of Things. - Learn how to develop and use a prototype Internet of Things ecosystem using a specific open framework.	Internet of Things	E-Learning Platform	Free	The present work, produced by the IN4WOOD Consortium, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License	IN4WOOD - Institution: CETEM	E-Learing Platform (Registration required): https://app.in4wood.eu/login	English - German - Italian - Spanish	2018 / 2019	Contemporary	EQF Level - 5	Link to to E-Learning Platform https://app.in4wood.eu/login	Text (pdf), PPT, Videos
Industry 4.0	Other specific	Integrated Systems	The course on Integrated Systems is structured in three parts. The first one delves on the mathematical theory and the concepts that are needed to understand how integrated systems work. In the second part, real architecture is described, specifying how the integrated systems can be built, including the different available options. This is completed in the third part, that deals with the real-world implementation of these concepts, including the issues that can be found when doing so. 1. Theoretical Aspects; 1.1 Complexity theory; 1.2 Networks in complex systems; 1.3 Legacy and path dependency; 1.4 Convergence and divergence; 1.5 Synergy, adaptation and evolution; 2. Architecture; 2.1 The service economy; 2.2 Service-oriented architecture; 2.3 The IoT framework SOFIA2 as a Service-Oriented Architecture; 2.4 Event-oriented architecture; 2.5 Modularity; 2.6 Self-organization; 2.7 System ecology; 3. Implementation; 3.1 Middleware for distributed applications; 3.2 Types of Middleware; 3.3 Integration topologies; 3.4 Integration challenges	**Knowledge** - Know about complex systems. - Understand the underlying mathematical concepts and properties of complex systems. - Delve in the implementation of complex systems from at least a theoretical perspective. **Skills** - Know abstract concepts on complexity theory. - Know concrete concepts on the instantiation of complexity theory. - Understand economic and architectural concepts related to the service-oriented models. - Identify different middleware examples. - Recognize different topologies and their importance for integrated systems. **Competences** - Ability to recognize and to work with a complex system. - Ability to identify and define the features of an integrated system. - Ability to work with network environments. - Ability to decide adaptations of complex integrated systems, improving a give system for a certain goal.	Integrated Systems	E-Learning Platform	Free	The present work, produced by the IN4WOOD Consortium, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License	IN4WOOD - Institution: CETEM	E-Learing Platform (Registration required): https://app.in4wood.eu/login	English - German - Italian - Spanish	2018 / 2019	Contemporary	EQF Level - 5	Link to to E-Learning Platform https://app.in4wood.eu/login	Text (pdf), PPT, Videos
Industry 4.0	Other specific	Big Data & Analytics	This course is structured in four parts. In the first part, theoretical fundaments of big data and their relation with previously-common concepts is described, along with the uses and added value that can be provided by it. The second section describes some of the most extended technologies currently used in big data, along with their features and comparative work. In the third section, the student will learn how to use big data and how to apply its advantages to the real world. The fourth section describes a related technology, more advanced, known as Analytics, that is seen as a next evolutionary step once big data skills are controlled. 1. Big Data Theory; 1.1 Big data fundamentals; 1.2 Big data platform; 1.3 Big data methodology; 1.4 Use cases and added value; 2. Big Data Technologies; 2.1 Big Data Technologies I; 2.2 Big Data Technologies II; 3. Using Big Data; 3.1 Data access; 3.2 Administration and data structures; 3.3 Advanced programming; 4. Analytics; 4.1 Analytics fundamentals; 4.2 Patterns, relationships and predictive modeling; 4.3 Data manipulation and machine learning; 4.4 Analytics technologies	**Knowledge** - Learn the fundaments of Big Data, in particular the mathematics behind it. - Learn about the use cases of and added value generated by Big Data. **Skills** - Differentiate between the technologies used in Big Data and its features. - Learn how to manage a Big Data environment. **Competences** - Learn how to use Big Data to reach useful conclusions. - Program in Big Data. - Learn basic competences on analytics, machine learning and related technologies.	Big Data / Analytics	E-Learning Platform	Free	The present work, produced by the IN4WOOD Consortium, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License	IN4WOOD - Institution: CETEM	E-Learing Platform (Registration required): https://app.in4wood.eu/login	English - German - Italian - Spanish	2018 / 2019	Contemporary	EQF Level - 5	Link to to E-Learning Platform https://app.in4wood.eu/login	Text (pdf), PPT, Videos
Industry 4.0	Other specific	Cloud Computing	The goal of this course is to introduce the Cloud Computing (CC) concept and to give which are their main features of this hot topic paradigm. Moreover, the course shows the importance of developing data repository and management solutions in the cloud, emphasizing the huge impact the CC solutions have in the production processes as well as the main advantages of CC compared with a local deployment solution. Finally, some examples of medium-large size companies using Cloud Computing in their businesses models are presented. 1. Introduction; 1.1 Introduction to Cloud Computing; 2. Main Characteristics; 2.1 Main Characteristics; 3. Models of Cloud Computing; 3.1 Models of Cloud Computing. Part I; 3.2 Models of Cloud Computing. Part II; 4. Deployment Models; 4.1 Deployment Models; 5. Advantages and disadvantages of Cloud Computing; 5.1 Advantages and disadvantages of Cloud Computing; 6. Business Success stories; 6.1 Business Success stories; 7. Future of Cloud Computing in Industry; 7.1 Future of Cloud Computing	**Knowledge** • Acquire basic knowledge about Cloud Computing. • Know how could be used in the industrial context. • Know, in general terms, which are the main characteristics of Cloud Computing. • Learn about the hierarchy of Cloud Computing • Acquire the necessary knowledge about the different available configuration types to develop Cloud services. • Know the advantages and disadvantages of developing services in the Cloud versus serving services locally. • Know business experiences where Cloud computing has been used. **Skills** • Enumerate the main characteristics of Cloud Computing. • Differentiate some scenarios to be deployed. • Identify, enumerate and explain the different models of Cloud Computing. • Enumerate the advantages and disadvantages of Cloud Computing. • Give a general view of the current use and the future of Cloud Computing in the industry. **Competences** • Understand the use of Cloud Computing in different industrial scenarios. • Give a general view of Cloud Computing. • Decide which of the models are the best for a business model. • Analyse and take decisions about the better configuration to be used for a specific purpose. • Analyse an industrial scenario in order to identify if the use of Cloud Computing could improve the performance of the industrial activity. • Take decisions about the most suitable deployment for a specific industrial need.	Cloud Computing	E-Learning Platform	Free	The present work, produced by the IN4WOOD Consortium, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License	IN4WOOD - Institution: CETEM	E-Learing Platform (Registration required): https://app.in4wood.eu/login	English - German - Italian - Spanish	2018 / 2019	Contemporary	EQF Level - 5	Link to to E-Learning Platform https://app.in4wood.eu/login	Text (pdf), PPT, Videos

Industry 4.0 — Other specific

Communication Networks

Description: The goal of this course is to give a general view about the communication networks in the Industry 4.0 context, from short-range to long-range communication networks. Some of the most important communication standards are shown, as well as some examples of communication network applications in the wood and furniture sector.

1. Introduction
1.1 Introduction to Communication Networks
2. Industrial Communication Networks (description and examples)
2.1 Industrial Communication Networks. Part I
2.2 Industrial Communication Networks. Part II
3. Industrial Communication Standards
3.1 Industrial Communication Standards. Part I
3.2 Industrial Communication Standards. Part II
3.3 Industrial Communication Standards. Part III
4. Use Cases and Business Success Stories
4.1 Use Cases and Business Success Stories
5. Future of Communication Networks in Industry
5.1 Future of Communication Networks in Industry

Knowledge
- Acquire basic knowledge about communication networks, knowing which are their specific uses in the industry.
- Get an extensive knowledge about the different types of current communication networks.
- Learn about some of the standards used in IT networks.
- Learn about specific uses cases.
- Know some business experiences where these communication networks have been used.
- Acquire a general view about the future of communication networks in the industrial sector.

Skills
- Give a general view of communications networks, like a definition and the context in the industry.
- Summarize the main industrial communication networks.
- Give a differentiation between Body, Personal, Local and Wide Area Networks.
- Identify the main industrial communication standards.
- Know what is the most suitable standard to use in each context.
- Know what the impact of the communication networks in the industry is.
- Give some examples of business success stories related to communication networks.

Competences
- Understand the use of communication networks in different industrial scenarios.
- Understand the use of communication networks in the industry.
- Identify what is the most suitable communication network to use in a specific purpose.
- Know the advantages and disadvantages to use each communication technology in a specific scenario.
- Identify the main existing communication standards and how they work in order to use them in the industrial environment.

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Cyber-Security

Description: The aim of this course is to give a description about what cybersecurity is and the importance of it in the enterprises. To do this, the course explains the most important cybersecurity attacks, potential threats and the consequences that networks could suffer if cybersecurity rules are not applied. In addition, the course gives security solutions through devices, methods and good practices to improve the security quality and reliability of the enterprise network system.

1. Introduction
1.1 Introduction to Cybersecurity
2. Types
2.1 Malware types. Part I
2.2 Malware types. Part II
3. Malware symptoms
3.1 Malware symptoms
4. Security methods and devices
4.1 Security devices
4.2 Security methods
5. Recommended security practices
5.1 Recommended security practices
6. Future of Cyber-Security
6.1 Future of Cyber-Security

Knowledge
- Acquire basic knowledge about cybersecurity.
- Have a general view about their use in the industry.
- Learn some of the malwares that could reach the business network and how to differentiate them.
- Know the main symptoms networks could have if a malware is working on it.
- Learn some of the different types of cybersecurity methods and devices used to make a stronger network in the industry.
- Have a guideline explaining, step by step, what are the best security practices to follow in the industry.
- Get a general view about the future of cybersecurity in the industry, focused on I4.0

Skills
- Give a definition and explain the context of cybersecurity in the industry.
- Identify the malware installed in a system.
- Identify if a malware is running in a device according to some of the malware symptoms learned.
- Mitigate and reduce the impact of a malware or group of malware in a system.
- Know what the best devices are to use in each moment.
- Know what important the cybersecurity is in terms of the industry.

Competences
- Recognize the basic characteristics of cybersecurity.
- Explain what is the importance of the cybersecurity in the industry.
- Get a system and identify if it is infected and what malware is running on it.
- Easily identify software suspected of being malware.
- Get an infected system and provide the neccesary devices and methods to mitigate the malware effect.
- Prevent the malware installation and isolate infected devices.
- Give some steps to reduce the impact of a malware.
- Know how the cybersecurity could be improved

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Collaborative Platforms

Description: This course deals with the different options and use of collaborative Platforms in Business, Academic, Customer and Student environments. The course also Investigates Options for implementing a Strategy Transformation into Businesses and gives a guide of key elements to consider to give the best chance of delivering success.

1. Introduction to Business Strategy Transformation
1.1 Understanding Strategy Transformation
1.2 Management Platforms to manage business transformation
2. B2B (Business to Business), B2C (Business to Customer), C2C (Customer to Customer)
2.1 Benefits of collaborative platforms in a B2B environment
2.2 Communicating with partners across the sector and selection of a Business 2 Business platform
2.3 Benefits of Business to Customer platforms (B2C)
2.4 Selecting a Business to Customer platform (B2C)
2.5 Benefits to participants of Customer to Customer platforms (C2C)
2.6 Selecting Customer to Customer platforms (C2C)
3. U2B (University to Business)
3.1 Benefits to participants of University to Business platforms (U2B)
4. U2S (University to Student), S2S (Student to Student)
4.1 Benefits to participants of University to Student (U2S) and Student to Student (S2S) platforms
5. Implementing Business Transformation
5.1 Historic approaches to Business Strategies
5.2 Preparing for Business Strategy Transformation
5.3 Configuring your strategy on a collaborative platform
5.4 Identifying initial goals for your business transformation
5.5 Feeding back into your business strategy

Knowledge
- Know the key requirements for communicating with potential partners and suppliers in a Business to Business environment.
- Understand what they believe the current customer requirements and needs are in the market in relation to a Business to Customer environment.
- Understand the needs of a forum where they can discuss and highlight the wants and needs from the industry in relation to Customer to Customer environment.
- Understanding current trends in the marketplace and wanted and needed products in a University to Business environment.
- Understand the current trends in the marketplace that they need to train their students to deliver on in a University to Student context.

Skills
- Identify mechanisms by which they can engage with other businesses and collaborate and potentially offer complimentary products.
- Identify how to engage with the customer base in order to identify current and emerging customer wants and needs.
- Gain the skills to be able to discuss these interactively with other consumers and provide an insight to be used by the industry.
- Understand the priority and upcoming areas of focus for the market.
- Understand the trends in the market and where the best opportunities exist for career progression from their peers.

Competences
- Identify potential partners and see what other businesses in the market are looking for in terms of supply opportunities.
- Identify ways to engage with the customer base to determine current and future needs and how they can produce products which do or will meet their needs.
- Understand the trends of consumers and the trends in the market which may influence their choices and decision making.
- Have a much clearer understanding of what the businesses need and what they should be focusing their students on and what innovations they can prototype for them.
- Know how to focus their studies to add the best values to their skills and also be successful in a career in the market.
- Be able to make an informed decision on their areas of focus for their careers.

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Applications of Logistics

Description: This course comprises a set of learning content about different and useful management system for furniture and woodworking industries focused on logistics tools and management systems employed, like Inventory, warehouse, resource planning and technologies employed, like RFID.

1. Warehouse management systems
1.1 Introduction to Warehouse Management
1.2 Warehouse tasks
1.3 Warehouse classification
1.4 Plant Layout I. Introduction, objectives and cornerstones
1.5 Plant Layout II. Methodology in furniture factory
1.6 WMS. Definition, features and relations with the logistic chain
1.7 Implementation of a WMS
1.8 Example of a WMS in the furniture industry. Part 1
1.9 Example of a WMS in the furniture industry. Part 2
2. Inventory management and DRP (Distribution Resource Planning)
2.1 Introduction to Inventory Management
2.2 Demand. Definitions and key features
2.3 Types of Inventory
2.4 Inventory Costs
2.5 Criteria of entry and exit product flows
2.6 ABC Classification
2.7 DRP. Definition and main features
2.8 DRP Relationship with the Value Chain
2.9 DRP Techniques
3. Table of Board of KPIs (Key Performance Indicators)
3.1 Introduction to Indicators Scorecard. Objectives
3.2 Generating a Scoreboard. Perspectives, phases and difference levels
3.3 Indicators. Functions, objectives and main features

Knowledge
The learner...
- Knows the principles and basics of Warehouse Management.
- Identifies the different kind of Plant Layouts.
- Knows and recognizes the most relevant Warehouse Management System (WMS) tools.
- Knows the principles and basics of Inventory Management.
- Knows and recognizes the most relevant Inventory Management (WMS) tools.
- Gains knowledge and expertise on Key Performance Indicators (KPI) analysis and advanced techniques.

Skills
- Adapt WMS tools to a Furniture/Woodworking company.
- Carry out industry plant layouts.
- Adapt Inventory Management and Distribution Resource Planning tools to a Furniture/Woodworking company.
- Create and define KPI that help any business unit.
- Analyze and Infer KPI results.

Competences
- Manage the warehouses from furniture and woodworking industries.
- Carry out the most suitable plant layout at a furniture/wood products manufacturing plant.
- Manage the Inventory from Furniture and Woodworking industries.
- Distribute and plan all resources from Furniture and Woodworking industries.
- Implement a manage monitoring and evaluation management system that helps the logistics of any furniture/wood products manufacturing company.

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Workflow Management Systems

Description: This course comprises a set of learning content about workflow management systems for furniture and woodworking industries specifically those related to planning strategies and production management in the medium and short term.

1. APP (Aggregate Production Planning) and Capacity control and Capacity Requirement Planning
1.1 Strategic planning. Forecasts
1.2 Long-term forecast and capacity planning
1.3 Processes and products. Tasks and measurement of work. Location
1.4 Aggregate planning
2. MPS (Master Production Schedule) and MRP II (Manufacturing Resource Planning)
2.1 Tactical planning. Master production schedule
2.2 MPS. Example of how MPS is implemented in the furniture sector
2.3 MRP I and MRP II. Definition and features
2.4 Optimized production and constraints
2.5 Planning and Control Systems
2.6 Example of MRP in the furniture sector. Part 1
2.7 Example of MRP in the furniture sector. Part 2
2.8 Example of MPS in the furniture sector
3. ERP (Enterprise Resource Planning)
3.1 Introduction to ERP systems. Concept
3.2 Main features, functions and modules
3.3 Implementation, methodology and success factors
3.4 Example of implementing a ERP in the furniture_Simgest.ERP. Characteristics
3.5 Example of implementing a ERP in the furniture_Simgest. ERP
4. Lean Manufacturing (workflow and improvement of manufacturing operations)

Knowledge
- Knows the basic concepts about capacity planning and forecasts systems
- Identify correctly and knows the concepts of planning in the medium and long term
- Becomes familiar with the concept of disaggregation of an aggregate planning. Master production schedule
- Knows the use and importance of a correct planning of the material requirements and how they are implemented within the ICT systems
- Becomes familiar with production management systems and their main tools
- Knows the use and functionality of the enterprise resource planning systems (ERP)
- Knows the fundamental Lean tools and their contribution to the improvement of competitiveness of a production plant

Skills
- Delimit the basic requirements of an aggregate planning system
- Perform the disaggregation of a planning in short-term master plans
- Develop a list of materials and implement it in a master plan
- Calculate weekly and daily production requirements to satisfy an MPS
- Basic skills to differentiate the main and secondary modules of an ERP in the furniture sector
- Implement Lean tools in a production plan

Competences
- Define and execute strategic production plans in companies in the sector
- Establish and develop the basic requirements of an aggregate planning system
- Manage material supply systems through the MRP modules
- Know the modules of the customized ERP systems for the furniture sector
- Identify and implement improvements in traditional management systems

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Domain	Subcategory	Course	Content / Index	Knowledge / Skills / Competences	Topics	Type	Cost	Conditions	Institution	Platform	Language	Year	Temporality	EQF	Credits	Link	Format
Industry 4.0	Other specific	Standards Certifications and Legal Issues	The goal of this course is to show the context of standardization in Industry 4.0, the consortiums and organizations working on it, the different types of working groups and committees and the current and future standards about the Key Enabling Technologies. The legal issues behind Industry 4.0 are also reviewed, paying attention to data protection authority, current regulations and liability. 1. Introduction to standardization 1.1 Introduction to standardization in Industry 4.0 2. State of art/challenges in standarization in I4.0 2.1 Actors involved and challenges to approach in the Industry 4.0 standardization 2.2 The importance of standardization 3. Consortiums and organisations. Working Group Committees 3.1 Working groups and standards in I4.0-cybersecurity 3.2 Working groups and standards in I4.0-connectivity (I) 3.3 Working groups and standards in I4.0-connectivity (II) and robotics 3.4 Working groups and standards in I4.0- 3d printing 3.5 Working groups and standards in I4.0-other KETS 4. Legal issues in Industry 4.0 4.1 Legal issues in I4.0-authorship and data protection (I) 4.2 Legal issues in I4.0-authorship and data protection (II) and current regulation 4.3 Legal issues in I4.0-legal liability	**Knowledge** • Acquire knowledge about the context of standardization in Industry 4.0 paradigm and its importance. • Know challenges of standardization in Industry 4.0 • Know how the address standardization in Industry 4.0 through RAMI 4.0 • Acquire knowledge about the consortiums and organizations bodies behind Industry 4.0 standardization: their roles and the kind of standards they propose, approve, review or modify. • Acquire deep knowledge about the working group committees focused on the standards behind KET technologies. • Know about the most relevant standards, focused on KET technologies. • Know a guideline about how to apply standards in factories applying Industry 4.0, mainly for Wood and furnitur sector. • Acquire knowledge about the legal issues in Industry 4.0 **Skills** • Identify the need of standardization in Industry 4.0 • Get knowledge about the challenges regarding standardization in Industry 4.0 • Extract from RAMI 4.0 a simple and manageable architecture model as reference for Wood and Furniture Sector • Identify the international organizations and entities behind Industry 4.0 standardization • Enumerate the roles of standardization bodies • Enumerate what standards (layers in the RAMI 4.0 architecture) are in charge of each entity. • Enumerate the important working groups involved in Industry 4.0 standardisation • Link the working groups with the standards of industry 4.0 under their approval or supervision. • Identify the standards focused on the most relevant key enabling technologies of Industry 4.0 • Enumerate the steps to follow in the implementation of Industry 4.0 in companies/factories under the current and future standards. • Identify the legal issues concerning the Industry 4.0 **Competences** • Analyse standardization issues in the uses cases of companies/factories implementing technologies of Industry 4.0	Standards Certifications / Legal Issues	E-Learning Platform	Free	The present work, produced by the IN4WOOD Consortium, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License	IN4WOOD - Institution: CETEM	E-Learing Platform (Registration required): https://app.in4wood.eu/login	English - German - Italian - Spanish	2018 / 2019	Contemporary	EQF Level - 5		Link to to E-Learning Platform https://app.in4wood.eu/login	Text (pdf), PPT, Videos
Circular economy	General	Circular Economy in the wood and Furniture Sector	1 - Introduction to the circular economy 2 - Keys of the Circular Economy 3 - The sector and its state with respect to the circular economy 4 - Regulations and legislation 5 - Inclusion of the circular economy in the business model of the sector 6 - Marketing of products in the circular economy 7 - Value creation through the circular economy 8 - Supporting by Key Enabling Technologies	Learning outcomes: Assess environmental aspects of Circular Economy in industry Integrate the circular economy as a key aspect in the business model of the sector Relate the various dimensions of customer value creation in a circular economy environment Skills: Knowledge about the identification of suitable ecological suppliers for the substitution of materials Co-creation with customers Knowledge about reasons and behaviors of organic consumptiom Innovation in the use of untapped materials	Circular Economy, Sustainability, Regulatory Framework	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet	English	2021	Contemporary	5	3	N/A yet	Text, presentations
Circular economy	Furniture	Eco and sustainable design	1 - Introduction to eco and sustainable design 2 - Traditional design versus eco and sustainable design 3 - EU Legal and environmental framework 4 - Cost and life cycle analysis 5 - Principles and strategies 6 - Applying eco and sustainable design 7 - Environmental aspects of the company 8 - Environmental product declaration	Learning outcomes: Assess environmental aspects of ecological and sustainable design in the industry Identify action plans to mitigate the environmental impact on the industry Relate ideas and new products with social problems in furniture design processes Skills: Recognise environmental aspects and methodologies for evaluating environmental impact Evaluate the environmental impact of production and the product itself Coordinate the management of the communication and document registration processes Management of environmental incidents and mitigation plans	Ecodesign, Furniture, Sustainability	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet	English	2021	Contemporary	5	3	N/A yet	Text, presentations
Industry 4.0	Management	Innovation management systems	1. Introduction to Innovation Management Systems 2. Roles in the Innovation Management System 3. Design Thinking 4. Intellectual property management in an organization 5. Collaboration management 6. Creativity management	Learning outcomes: Evaluate the operation of an Innovation Management System in an organization "Integrate in a furniture company innovative ideas to achieve the success of its products Arrange motivation the staff of the organization to generate creativity and innovation Skills: Know the operation of an innovation management system Promote the innovation process in an organization Management of intellectual property as an element of innovation in an organization	Management systems, Intellectual property, Innovation	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet	English	2021	Contemporary	5	3	N/A yet	Text, presentations
Industry 4.0	Furniture	Product Design and Digitalization	1 - Introduction to the furniture design 2 - Design within a method 3 - Creativity and concept 4 - Advanced digital design tools for the furniture industry 4.0 5 - Computer Aided Design for furniture products 6 - Making a digital prototipe 7 - Reverse engenieering in the furniture industry 8 - Digital design documetation applicable to the furniture industry 4.0	Learning outcomes: Test different advanced digital tools applicable to furniture design Build solutions for new products design through advanced digital design tools Identify social needs through design methods and processes Skills: Design process and the issues that arise in the progression from conceptual to detailed design Develop skills in use of advanced digital design tools Understand the role that technology is playing in the transition through a digital manufacturing and design and implement a correct information flow's strategy in a company for industry 4.0 Role of designer within the furniture industry 4.0	Furniture design, Design Thinking, Digitalization	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet	English	2021	Contemporary	5	3	N/A yet	Text, presentations
Industry 4.0	Management	Technological surveillance and competitive intelligence.	1. Introduction to Technological Surveillance and Competitive Intelligence 2. Roles and responsibilities in a Technological Surveillance and Competitive Intelligence System 3. Technological Surveillance and Competitive Intelligence Tools 4. Design of a Technological Surveillance and Competitive Intelligence system 5. Final product in a Technological Surveillance and Competitive Intelligence System	Learning outcomes: Testing a Technology Surveillance and Competitive Intelligence system in an organization Build a Technology Surveillance and Competitive Intelligence system for an organization of the furniture sector Identify the information needs of an organization Skills: Managing Technological Surveillance in an organization Use specialized search tools Identification and use of specialized information sources	Technological surveillance, Competitive intelligence	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet	English	2021	Contemporary	5	3	N/A yet	Text, presentations
Industry 4.0	Other specific	Additive Manufacturing	1 - Introduction to Additive Manufacturing 2 - Workflow: How does 3D printing works? 3 - 3D Printing Technologies 4 - Production Process in 3D Printing 5 - Application of 3D Printing in the furniture sector. Design and Prototyping. 6 - Molds for Prototyping and Final Products. Rapid Tooling. 7 - Final Products. 8 - Commercial Aspects and roll of AM within Industry 4.0	Learning outcomes: Assess the different production process in additive manufacturing Construct a furniture design based on production processes in additive manufacturing Relate ideas and new designs to social issues in furniture production processes. Skills: Assess the different production process in additive manufacturing Construct a furniture design based on production processes in additive manufacturing Relate ideas and new designs to social issues in furniture production processes Role of Additive Manufacturing in Industry 4.0	Additive manufacturing, 3D printing	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet	English	2021	Contemporary	5	3	N/A yet	Text, presentations
Industry 4.0	VR / AR / MR / XR	Augmented Reality	1. Introduction to Augmented Reality 2. Augmented Reality vs Virtual Reality 3. AR: How it works? 4. Types of Augmented Reality 5. Brief description of some software used in AR 6. Application of AR in the furniture sector. Design and Prototyping. 7. Application of AR in the furniture sector. Production Process. 8. Application of AR in the furniture sector. Supply chain. 9. Application of AR in the furniture sector. Maintenance.	Learning outcomes: Evaluate the use and benefits of Augmented Reality technology Design theoretical augmented reality solutions for the furniture sector Explain the posibilities of Augmented Reality within the wood-based industry Skills: Uses of Augmented Reality throughout the production chain of furniture, from the design to the final piece Identify the different uses of Augmented Reality in the furniture market Recognise the different uses of augmented reality in the production chain Role of Augmented Reality in Industry 4.0	Augmented reality	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet	English	2021	Contemporary	5	3	N/A yet	Text, presentations
Industry 4.0	Management	Digital Transformation in Industry 4.0	1 - Introduction to I4.0. What is I4.0? 2 - History of Industry 4.0. 3 - Society 5.0. 4 - Digital transformation in the wood-based industry. 5 - Application of some Key Enabling Technologies in the production process. 6 - Benefits of Digital transformation within the Industry 7 - Machinery of the Industry 4.0 in the woood-based industry. 8 - Case studies.	Learning outcomes: Evaluate the possibilities of Industry 4.0 and digital transformation in the wood and furniture sector. Integrate the benefits of digital transformation in the timber industry. Integrate knowledge of digital transformation into personal, civic, social and employability skills. Skills: Be able to be part of a team that leads the digital transformation of a company. Know how to identify the new key technologies of digital transformation. Transmit the importance of digital transformation for a furniture company. Gain knowledge about digital transformation.	Industry 4.0, Furniture industry, digital transformation	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet	English	2021	Contemporary	5	3	N/A yet	Text, presentations
Industry 4.0	VR / AR / MR / XR	Simulation and 3D Scannig	1 - Introduction to Simulation and 3D Scanning. 2 - Fundamental Simulation concepts. 3 - Application of Simulation in the Industry. 4 - Application of 3D Scanning within the wood-based Industry. 5 - 3D product modeling: 3D Scanning and Rapid Prototyping. 6 - Introduction to FlexSim. 7 - Practical Simulation example. 8 - Roll of 3D simulation and scanning in industry 4.0.	Learning outcomes: Assess the uses of 3D scanning and simulation within the wood-based Industry. Display an operation or product through 3D scanning and simulation technologies. Identify 3D scanning and simulation solutions for current and future issues in the wood and furniture industry. Skills: Know what simulation is, its most used techniques and software. Know what 3D scanning is and how it works. Applications in the furniture and wood sector. Identify the phases for a simulation study.	3D scanning, Prototyping, Simulation	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet	English	2021	Contemporary	5	3	N/A yet	Text, presentations
Industry 4.0	Wood	Cloud Computing and Big Data applied to wood-based industry	1 - Introduction to Cloud Computing and main characteristics 2 - Benefits of Cloud Computing 3 - Deployment Models 4 - Introduction to Big Data, characteristics and dimensions of scalability 5 - The process of Data Analysis 6 - Getting started with Hadoop 7 - Introduction to Big Data Modeling and Management 8 - Real Big Data Management Applications	Learning outcomes: Determining gaps or failures in a Cloud Computing and Big Data scenarios. Providing solutions in Cloud Computing Environment and Big Data analysis ecosystems. Revise literature and new trends of Cloud Computing in the Wood and Furniture Industry. Skills: Recognition of cloud-based and Big Data technologies in industrial environments. Ability to apply the knowledge acquired in Cloud Computing and Big Data in Industrial environments based on furniture and wood. To know future trends in the Cloud Computing paradigm.	Cloud computing, Big data, data analysis	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet	English	2021	Contemporary	5	3	N/A yet	Text, presentations
Industry 4.0	Management	Internet of Things	1 - Introduction to Internet of Things and main characteristics 2 - Internet of Things Network Architecture 3 - Internet of Things communcation protocols 4 - Internet of Things Challenges 5 - Application of Internet of Things 6 - Deployment of an Internet of Things Network 7 - Use cases of Internet of Things in the Wood and Furniture Industry 8 - Relevance of Internet of Things for the future	Learning outcomes: Synthesize main concepts and elements in a Internet of Thing environment Develop some different Internet of Things scenarios Revise literature and new trends of Internet of Things in the Wood and Furniture Industry. Skills Competencies in the identification and development of Internet of Things solutions in the Industry 4.0. Development of skills for applying Internet of Things in the furniture industry. Roll of Internet of Things in Industry 4.0	Internet of Things, IOT architecture, IOT deployment	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet	English	2021	Contemporary	5	3	N/A yet	Text, presentations
Industry 4.0	General	Network Communications in the industry	1 - Introduction to Network Communications in the Industry 2 - Digital Communication Basics 3 - Main characteristics of Network Communications 4 - Evolution of Communication Networks 5 - Industrial Communication Networks 6 - Industrial Communication Standards 7 - Layered Architectures 8 - The Internet	Learning outcomes: Synthesize main concepts and elements in an Industrial Communication Network Suggest tools and improvements of Communication Networks in an Industrial environment Revise literature and new trends of Communication Networks in the Wood and Furniture Industry Skills: Competencies in the identification and deployment of Communication Networks Problem solving in Industrial Networks Basic knowledge in the wide tecnology spectrum related to Communication Networks	Industry 4.0, Communications network, Internet	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet	English	2021	Contemporary	5	3	N/A yet	Text, presentations

Category	Sector	Course Title	Content	Learning outcomes / Skills	Keywords	Course type		Conditions	Provider	URL		Time	Language	Year			Format
Industry 4.0	Wood	Robotic applied to the wood-based industry	Introduction to Industrial Robotic Main concepts of industrial robotic Technical issues in robotic and robots: sensors, actuators, manipulators, gears and other mechanical systems Micro, nano and mobile robots Robots in small and medium enterprises Guidelines for implementing robotic systems in small and medium enterprises Use cases in the wood-based industry Future trends of robotic in industry	Learning outcomes: Discuss the concepts of industrial robotic and their context in the wood-based industry Identify among types of robots and their use in different process in the wood-based industry Defend an industrial robotic solution to current and incomming issues in the logistic and manufacturing wood-based industry Skills: Ability to take decisions about the use of robots in wood-based industry Synthesize main concepts and elements taking part in the industrial robotic Ability to improve wood-based industry through industrial robotic and robots	Robotics, industrial robotics, robotics in wood industry	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet		Contemporary	English	2021	5	3	N/A yet	Text, presentations
Industry 4.0	Management	Wireless Technologies for logistic and manufacturing	Introduction to wireless technologies Radio Fequency Identification (RFID): introduccion, main characteristics, types, devices, operational modes, standards, privacy, security, use cases and future trends Near Field Communication (NFC): introduction, main characteristics, devices, standards, privacy, security, use cases and future trends Bluetooth/Bluetooth Low Energy (BLE): introduction, main characteristics, devices, standards, privacy, security, use cases and future trends Zigbee: introduction, main characteristics, devices, standards, privacy, security, use cases and future trends Wi-Fi: introduction, main characteristics, devices, operational modes, privacy, security, use cases and future trends Wireless technologies for IoT: SigFox, Lora and NB-IoT 2G/3G4G: introduction, main characteristics, devices, operational modes, privacy, security, use cases and future trends 5G: introduction, main characteristics, operational modes, standards, privacy, security, use cases and future trends Smart wireless devices for logistic and manufacturing: wearables	Learning outcomes: Discuss the concepts around wireless technologies and their context in factories and manufacturing/logistic processes Discriminate among the most popular wireless technologies in factories and manufacturing/logistic processes Identify the wireless technologies solutions to current and incomming issues in the logistic and manufacturing processes in industry Skills: Ability to take decisions about the use of wireless technologies in logistic/manufacturing processes Synthesize main concepts and elements taking part in the deployment of wireless technologies in factories Ability to suggest new technologies or improvements in wireless technologies operating in factories/logistic/manufacturing	Wireless, RFID, NFC, Zigbee, Bluetooth	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet		Contemporary	English	2021	5	3	N/A yet	Text, presentations
Industry 4.0	General	Automation and mechanization. Low Cost Automation	1-The concept of automation and mechanization 2-Characteristics of the production system environment (first and second) 3-The description of available technology in the field of low cost automation 4-Production in the field of low cost automation 5-Application of low cost automation in the furniture sector. Design and Prototyping. 6-Prototypes and control systems 7-Final projects. 8-Commercialization aspects of the system and its role in industry 4.0	Learning outcomes: Devise the production system in reference of production organization forms development Composing the new supporting solutions of production processes Proposes ideas to societal issues according to applied organizational forms in production system Skills: Understanding the terms and aspects of automation and mechanization, system production in references of low cost automation Knowledge of available low cost automation technology and how great it has an impact on the first and second environment, and organization forms of production system Development of skills of design and prototyping the low cost automatization prototypes and control systems in furniture industry Low cost automation manufacturing in Industry 4.0	Production processes, automation, manufacturing	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet		Contemporary	English	2021	5	3	N/A yet	Text, presentations
Industry 4.0	General	Management systems. Lean manufacturing.	1-Concepts and basics of management in manufacturing enterprises 2-Environmental Management System 3-Business models of modern organizations 4-Quality management system: organization context and leadership 5-Measurement and modeling in management and lean manufacturing 6-Information and IT system in lean manufacturing 7-Leadership, planning and effective process management 8-Man and organization - humanisation of the work process. A learning enterprise in industry 4.0	Learning outcomes: Assesses ways of characterizing modern enterprise management systems in the furniture industry Constructs solutions, processes and tools of management systems in accordance with the lean philosophy Formulates socially responsible management systems in the spirit of lean philosophy Skills: Understanding the relationships between individual elements of management systems Synergization of various tools to create innovative solutions in management systems Ability to solve cross problems Creating solutions based on lean and eco principles	management system, enterprise management, Lean manufacturing	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet		Contemporary	English	2021	5	3	N/A yet	Text, presentations
Industry 4.0	Wood	Materials for furniture manufacturing	1-Perspectives and development directions of wood-based materials industry. 2- Wood-based materials from fibers (LDF, ULDF, fiber insulation boards, fiber mats etc.). Wood-based materials from chips (light chipboard, extruded boards, etc.) 3-Multilayer wood-based materials (typical plywood, bent plywood, composite multilayer materials) 4- Modification of parameters of technological processes and its influence on the parameters of produced wood-based materials 5-Testing the strength properties of wood-based materials (modulus of rupture, modulus of elasticity, internal bond, determination of resistance at axial removal of screws) 6- Testing the physical properties of wood-based materials (swelling, water absorption, surface absorption, wettability, free surface energy, density and density profile) 7-Alternative wood-based materials in constructions 8-New technologies in the design of wood-based materials	Skills: Assess (rating and valuation) typology of wood-based materials Changes technologies in the field of using wood-based materials in new construction solutions Synthesizes acquired knowledge for further self-education	wood-based materials, chipboard, fiberboard, alternative materials	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet		Contemporary	English	2021	5	3	N/A yet	Text, presentations
Industry 4.0	Furniture	Materials Processing	1. Cutting properties of solid wood 2. Cutting properties of wood-based materials 3. Static geometric accuracy of machine 4. Tools for solid wood processing 5. Tools for wood-based materials processing 6. Selection of machines and tools for the workpiece 7. Worpiece setting in the machines 8. Final product of the process	Skills: Managing of processing based of materials properties Knowlege of machine preparation for processing Development of tools for processing tasks Learning outcomes: Determine cutting properties of materials Demostrates the machine preparation for processing Combines the machine and tool for processing	wood machining, woodworking tools, cutting properties	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet		Contemporary	English	2021	5	3	N/A yet	Text, presentations
Industry 4.0	Furniture	Production processes in the furniture sector.	1 - Solid wood furniture production 2 - Panel furniture production 3 - Machining of wood and panel products 4 - Veneers and laminates in furniture production 5 - Finishing technology of furniture production 6 - Fittings in furniture 7 - Assembly and packaging 8 - Safe-handling, storage and transportation	Skills: Understanding specifics of furniture production Knowledge of application of specific material to tasks required Knowledge of application of specific tool to procedure required Knowledge on putting specific furniture piece to production Learning outcomes: Assess the knowledge of solid and panel furniture technology Adapts furniture production Technologically integrates designed furniture and production	furniture production, machining, finishing, fittings, furniture assembly	Complete blended learning course	Free	Free under conditions	Making 4.0 / WULS	N/A yet		Contemporary	English	2021	5	3	N/A yet	Text, presentations
Circular economy	General	Basic Concepts on Ecodesign	Introduction to ecodesign Traditional design against ecodesign European legal framework on environment and ecodesign Analysis and cost of life cycle Ecodesign principles Environmental aspects of the company Implementing ecodesign Environmental management Ecodesign in the environmental management Introduction to eco-labeling. communication Environmental product declaration. communication Ecodesign practical cases		ecodesign, environment, lifecycle	Complete online course	Free	Free under conditions	Ecosign / CETEM	http://www.ecosign-project.eu/		Contemporary	English	2018	To be estimated	3	Online	Text, presentations
Industry 4.0	Furniture	Digital Transformation Manager	Digital technology - exploration of contemporary emerging and potential disruptive technologies Digital technology - engineering and manufacturing Digital technology - simulation and AR/VR Digital technology - data & security Innovation and digital transformation Leadership in digital transformation Communication in digital transformation The people within the digital transformation Quality, risk and safety in digital transformation Social and environmental impact of digitisation Final project (optional)	Skills: The Industrial Internet of Things Cybersecurity General technical competencies Horizontal and vertical system integration Cloud computing Simulation Big data analytics Additive manufacturing Augmented reality Autonomous robots Blockchain	industry 4.0, digital transformation, key enabling technologies	Complete online course	Free	Free under conditions	Ditrama	https://ditrama.eu/en/training-course		Contemporary	English, French, Italian, Polish, Portuguese, Romanian and Spanish	2021	5	2,8	Online	Text, presentations
Circular economy	Furniture	Product-Service Development for Circular Economy and Sustainability Course	Modules: Introduction to the circular economy Business models Value chains Processes and materials Design and development Radical innovation and collaborative design processes Life cycle perspective Communication KATCH-Up Board Game CE Strategist CE Value chains CE Designer CE Journey CE Analyst KATCHine Carbon		Bioeconomy, Product Design, value chain, Life-cycle	Complete online course	Free	Completely free	PROSPEKTIKER, S.A.	https://www.katche.eu/circular-economy/training-materials/		Contemporary	English	2019	To be Estimated	To be Estimated	Online	Test, knowledge platform