

IMFUTURE: International Master's Degree for the FURniTURE Sector

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I01: Report on the Furniture and woodworking industry current skills and qualifications needs

Main Author:

Alberto Hoces-Garcia-University of Murcia

Contributing Authors:

Tomas Puebla Martinez (CETEM-Spain)

Giovanni Tosi (COSMOB-Italy)

Mike Dimont (BFM-UK)

Marcin Zbiec (WULS-Poland)

Ali Bakir (BNU-UK)

Juan Carlos García Villanueva (U Murcia-Spain)

Andrea Marconi (U Camerino-Italy)

Giovanni Tosi (COSMOB-Italy)

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1 The aim of the IMFUTURE project

The aim of “IM-FUTURE” is to develop the content for an International Masters’ Degree in the furniture sector

This activity was focused on breaking down the learning pillars into smaller and more manageable training modules and units. The objective is that the granularity of the modules will be such that student and companies can meet all their needs, assuring that no unnecessary training is received.

Each partner has participated in this definition according to their expertise and best practice training (face to face, on-line, slides, video, etc.). The training modules are going to be organised according to analysis of priority order and local requirements. It is going to be reflected the results of the research and survey that it was done in IO1

In previous IO, the partnership has received feedback about the necessities from the industry by surveys and workshops in UK, Spain, Poland and Italy. Finally, it was received more than 300 professional contributions. Moreover, the partnership has studied the current educational offer in HE in furniture sector in 22 countries (Austria, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, Italy, Latvia, Lithuania, Malta, Netherland, Poland, Portugal, Ireland, Romania, Slovakia, Slovenia, Spain, Sweden, UK) and, also it was studied in those 22 countries the educational offer in VET in furniture sector.

That information has been used to design the structure of the Master, training paths and training modules and units. Obviously, it was need a restructuration of the contents when the structure of the Master and modules, subjects and units were fixed because they had duplicate content and it was not organized in a comprehensible and training way.

In this report, you can find the structure of the Master, their modules, subjects and units with an explanation of each one.

Finally, it is using some terminology that it is necessary to know to understand properly the structure of the Master:

- Master is the whole content that we will develop
- Training paths, the different possibilities inside the Master – 60 ECTS
- Modules, are made to regularize the contents of the Master and make its structure and Training paths easier to be understood. For example: “Furniture design history” and “Design” is a Module
- Subjects, for example “Quality control”. Subject is a branch of knowledge studied or taught. It will be referred to an important part of the contents of furniture sector. Inside a subject, the content will have a common structure. Each subject has a number of ECTS, depending the number of hours to acquire the required knowledge, skills and competences.
- Units, inside each subject, for example “Material properties, construction, product development including proto-types”. Each unit could have a "powerpoint"
- ECTS: European Credit Transfer and Accumulation System. It is a standard mean for comparing the volume of learning based on the outcomes and their associated workload. It is considered 25 hours per credit point (because we are considering an academic year of 1500 hours of total workload and

60 ECTS credit). Moreover, the ECTS is split in 40% of teaching content, 40% of student work and 20% of tutorship and exam, in conclusion, 10 hours of teaching content, 10 hours of student work and 5 hours of tutorship and exams.

2 Short description of IO1.

This report intended to provide a complete analysis of the current competences and qualifications needs of the European furniture and woodworking Industry compared with the current training offer in Europe. It provided the information needed for preparing a more attractive learning content supporting competitiveness and employment in the sector.

This report was conducted based on the feedback provided by different stakeholders: Enterprises from the sectors, HE institutions, Students already involved in similar HE programmes, students willing to work in the sector, etc.

The main activities within IO3 were:

IO1-A1- Partner's current practices for the furniture and woodworking industry

IO1-A2- Study of the current educational offer existing in the EU, taking especial attention to HE programmes.

IO1-A3- Definition of current competences in the furniture sector.

3 Master's Programmes in Partners' Organisations

3.1 CETEM-Spain

CETEMs Master's degree course, entitled **Master in design and Industrial Organization for the furniture Sector**, is organized by the consortium of CETEM and other parties, such as universities and business partners. Courses are taught face to face, lectures are held by experts of furniture sector, along with the university staff. Course consists of 190hrs basic (common) block followed with 40hrs extensions.

Common block is filled with the modules such as:

- Basic knowledge of the sector
- Business management (Two modules) - Organization of company, Legal and fiscal environment, The continuity of the family business, Organization and management of human resources, Prevention of occupational hazards, Sales force and buying groups. Marketing, advertising and promotion, Management of suppliers. Costs and sets. Financial analysis. Strategic management. Public speaking.

- Product and technology of the sector - Product description. Materials: Wood and plywood, plastics, adhesives, varnishes, foam, Textiles, steelwork, other. Manufacturing processes. Machinery. EQM systems. Introduction to management systems. Ambient intelligence.
- Management - Management by processes. ISO 9001:2008. Environmental management. Quality and environmental certifications for the furniture
- Technical innovation - Technological surveillance. Industrial property. Innovation and project management. Innovation. Social networks.

Followed by the extensions:

- Technology - Organization and Industrial logistics. Improvement of productivity. Introduction to quality. Industrial Organization. The production function. Management of Stocks. Master production plan. Materials planning. Programming, launch and execution control. Methods and times. Industrial maintenance. Advanced production systems. Plant distribution. Flexsim. Financial system. Accounting and management programs. Production technology - CAD CAM systems. Machining practices. Logistics, storage and distribution. Prices policy. Logistics, warehousing and distribution. ERP systems. Remote control tools.
- Industrial Design - Management of the design process. Trends in the furniture Sector. Creativity. Conceptualization. Rhinoceros. Laboratory practice. Inventor. CAD CAM systems. Laboratory practice.

Courses are completed with some complementary works, visits to the companies, practices in companies.

Course is finalized by Master Thesis

3.2 UNICAM-COSMOB-Italy

Master degree, proposed by the UNICAM COSMOB prepares graduate to work in the three specific manufacturing sectors:

- Furniture (visual and interior design),
- Footwear (shoes and accessories design)
- Clothing (menswear, womenswear and knitwear)

Course consists of didactic activity, theoretical and practical actions in modules, and learning lab activities including realization of projects, workshops and seminars held by external teachers,

company visits, participation in events and trade shows; with specifically technology and analysis of trends in mind.

- Common block subjects are focused on overall design, materials, trends, value estimation etc., as follows: English, Eco-sustainable materials, Web and multimedia design, Image and analysis of product value, Brand marketing and Web and multimedia design, The color: expression and function. Certification and regulations for products. Trend analysis. Cost analysis. Design and Culture, Ergonomics, Semiotics
- Specializing subjects for furniture are more focused on the product : design, product concept, smart material, IT : fab lab, Rendering and animation, design history, modern habitats

Total teaching hours provided, including lectures, alternative teaching hours + individual study is 1500hrs per year. It is necessary to remark, that aim of the study is to develop/train not only professional in the furniture design, but professional able to move within several areas and capable of holding various roles such as designer, expert, promoter/consultant of innovative ideas.

3.3 Buckinghamshire New University-United Kingdom

BNU's MA Art and Design Practice program is designed to provide an interdisciplinary context of study in which students will follow their preferred route to obtain a degree in the area of their choice at Master's level. Available training paths/degrees are: MA Furniture Design, MA Product Design, MA Textiles, MA Fine Art, MA Ceramics, MA Jewellery and Silversmithing, MA Printmaking, MA Graphics, MA Illustration, MA Spatial and Interior Design.

- The course is organized into modules, such as Personal Project 1, Material Creativity, Art and Design Research Methods, Personal Project 2, Thesis and Personal Project 3, giving in total 180 credits (90 ECTS). Course takes one year full time/two years part time
- Similar course provided, at BSc level, is similarly organized into modules such as: Design Communication, Materials & Processes, Design Projects 1, Getting Connected, Design Visualisation, Applied Production & Manufacture, Design Projects 2, Making Choices, Design Projects 3, Design for Manufacture, Major Project and New Model Dissertation giving in total 360 (180 ECTS) credits in 3 years (Full Time)

It is necessary to remark that art and design subjects are learned in a studio and workshop environment. It is typical to art&design schools/universities, and such method involves a lot more students own work and commitment. Also, significant difference from the other learning types are

the fact that thesis does not finish course – it is predicted to prepare student for final, stage 3 personal project.

3.4 WULS -Poland

Warsaw University of Life Sciences does not offer MSc program for furniture sector. Studies dedicated to furniture are at BSc /engineer level only. However, those in need or willing to obtain further degree, can apply for MSc course in Wood Technology – Furniture Engineering, which in fact is an extension for both wood technology and furniture engineering graduates.

Furniture engineering BSc course is provided in both full time and weekend courses, both take 3.5 year (7 semesters). Program of the BSC course is quite extended, each semester earns 30 ECTS (7 semesters x 30 – 210 ECTS)

- BSc Topics/lectures on: Inorganic Chemistry, Physics, Mathematics, Materials Science, Wood Science (Anatomy), Styles in Furniture, Engineering Drawing, Biodeterioration of Wood Materials and other Materials, Organic Chemistry, Basis of Woodworking, Technical Metrology and Measuring Systems, Informatics Technology, Solid Wood Products and Sawmilling, Electrotechnics and Electronics, Ergonomics in The Furniture Industry, Physics of Natural Fibrous Materials, Mechanics, Mechanics of Structures, Technical Thermodynamics, Furniture Plastics and Fabrics, Automatics, Thermal and Plastic Processing of Wood, Adhesives and Gluing Techniques, Construction and Technology of Cabinet Furniture, Wood Cutting and Machining Tools, Environment Protection, Basics of Enterprise Economics, Basic Computer Aided Design, Professional practice, Project Management, Wood Machining, Wood Panel Technology, Construction and Technology of skeletal and upholstered Furniture, Finishing of Wood and Wood-based Materials, Development of the New Product, Exploitation of Machinery and Tools in Furniture Production, Furniture Decorating Techniques, Computerized process automation in production, Protection of wood materials in furniture, English Language.

Altogether, BSc course is around 2500 hours, **not including** students' own work, degree is completed after Engineer Thesis.

After completion of BSc degree, student may choose to continue studies on MSc course (BSc in wood technology or Furniture Engineering is needed). Course is provided both full time and weekend , totaling 3 semesters and 95 ECTS

- MSc Topics/lectures on: Economic and Investing on the Financial Market, Wood Waste Management, Exotic Wood Science, Wood Deterioration, Basic of Business Law, Statistic in Experiments, Drying Technology, Special Purpose Wood-Based Materials, Wooden Construction Engineering, Flexible Manufacturing, Furniture History and Elements of Furniture Construction, Marketing, Principles of Entrepreneurship, Preservation of Fungi in Buildings, Technics of Wood Finishing, Industrial Design of Furniture, Product management, Process Monitoring of Manufacturing Systems, Conservation and Restoration of Furniture, Logistics, Mechanization and Automation of Production Processes, CAD Systems in the Furniture Industry

Altogether, MSc course is around 1000 hours, **not including** students' own work, degree is completed after Master Thesis.

3.5 Comparison of existing Master's Programmes

The table below offers an overview on existing educational offer and experience in the consortium.

Topic	CETEM	Unicam/COSMOB	BUCKS	WULS
Program title	Y	Y	Y	Y
School/Department	Y	Y	Y	Y
Study mode Full Time	Y	Y	Y	Y
Study mode Part Time	N/A	Y	Y	Y
Duration Full Time	N/A	1Year	1 Year	1.5 Year
Duration Part Time	N/A	N/A	2 Years	1.5 Year (weekends)
Course Hours	190 + 40 only teaching hours	1500 with own work	N/A	1000 - only teaching hours
ECTS	N/A	N/A	90	95
Entry prerequisites	BSc or higher	BSc or higher	BSc or higher	BSc in Furniture/Wood Technology

Units /Modules	Y	Y	Y	Y
Theory (Lectures)	Y	Y	Y	Y
Coursework / Workshops	Y	Y	Y	Y
Practices (industry)	Y	N/A	N/A	Y
Site visits	Y	Y	Y	Y
Visiting Professors	N/A	Y	Y	Y
Study Abroad	N/A	Y	N/A	Y
Master Thesis/Dissertation	Y	N	Y	Y

3.6 Comparison of the content of the existing Masters' programme

The table below presents the comparison between the main content of the Masters programmes delivered in the consortium universities.

Content	CETEM	Unicam COSMOB	BUCKS	WULS
Introduction to the Sector and basic information	Y	Y	Y	Y
Business management	Y	N/A	N/A	Y
Logistics, storage, distribution	Y	N	N	Y
Product quality management	Y	N	N	Y
Marketing/Branding	Y	Y	N/A	Y
Furniture History	N	Y	Y	Y
Technology – Wood		Y		Y
Technology – Other materials	N/A	Y	N/A	Y

Technology – Drying	N/A	N/A	N/A	Y
Technology - Machining	Y	N/A	N/A	Y
Technology - CAD/CAM	Y	Y	N/A	Y
Technology - Finishing	N/A	N/A	N/A	Y
Construction Engineering	N	N	N	Y
Maintenance, automation, process monitoring	Y	N	N	Y
Conservation and restoration	N	N	Y	Y
Preservation (bio)	N	N	N	Y
Product Design	Limited	Y	Y	Limited
Ergonomics	N	Y	Y	Y
Art	N	Y	Y	N
Culture	N	Y	Y	N
Scientific planning (experiments, etc)	N	N	N/A	Y
Innovation	Y	Y	N	N
Overall impression of the graduate (authors opinion)	Engineer for the Sector	Industrial Designer	Product Designer	Engineer for the Sector

4 Summary of the existing provision and experience in the consortium

Having a look at the educational programs of the consortium, they can be easily divided into two groups

- Design (BUCKS, UNICAM-COSMOB)
- Engineering/Production/Distribution (CETEM, WULS)

Such division may come from the tradition of the universities/organizations, market requirements, and country/region main profile in the industry. I would not dare to directly compare

quality of the courses (it may be assumed high, because of the history of the organizations, and successful presence thru the years), but approach to the title MSc for the Furniture Sector is visibly different.

During the following work, consortium will have to decide, what to choose or how to divide amount of teaching hours to the following topics:

- **Design**
- **Design for Fabrication**
- **Fabrication**
- **Marketing and Distribution.**

This is not easy task, however – all consortium members have their own experience and overview of the market situation, which of the specialists are needed most on the variable markets/regions. Some countries are known for design specialists (and such graduates are expected in the region), some are clearly specializing in brand-less fabrication, some do both.

In author's opinion, experience of combining designer and production engineer is not very easy, especially if these are two different persons. Hopefully, having successfully combined these two specialists into one, versatile person, may be very profitable for the industry, in terms of cost and production planning time.

5 Academic programmes related to furniture in the European Union

5.1 Introduction

This report provides information regarding educational programmes related to the furniture industry in European Union, except those offered by the partners of the IM-FUTURE project. Thus, attention has been focused on High Education programmes, master degrees, especially, but it has been covered the entire spectre. Due to the complexity of educational laws in each country, not completely regularized with the European Union standard, this has been the only differentiation possible to make, and even that, there may be some levels that do not fit in it. Not all their information could have been explained in this report, so it is possible to follow (in pdf version) the link in each degree [**in this format**](#)¹.

¹ Note that the links may not work due to changes in them servers. All were working at the date of this report was finished: May 2017.

It is redacted by University of Murcia members, but people of the rest of the partners have been collaborating in the first search of these programmes. Both the search and the report were divided by countries, so the investigation responsible of each country is noted at the beginning of its section with the number of programmes found in it. These sections are organized alphabetically. The last thing to note is that not all the 28 countries of the European Union appear, because some of them have no programmes of our interest or they couldn't be find.

5.2 Austria

Four programmes found (research conducted by COSMOB)

A very good example of the exposed in the introduction happens in Austria, where no Higher Education programmes related to furniture have been found. Instead, there are four other design programmes that deserve our mention. **Interior Design & 3D Design** of the New Design University of St. Pölten, **Industrial Design** of the University of Applied Arts of Vienna, **Space & Design Strategies** of the University of Arts and **Industrial Design of Linz and Design & Product Management** of the University of Applied Science of Salzburg.

5.3 Bulgaria

One programme found (WULS)

On the opposite, there is a Higher Education program in Bulgaria. Is offered by the Faculty of Forestry Industry of the University of Forestry of Sofia and has two specialities: **Technology of wood and furniture and Engineering Design (Interior and design of furniture)**. Is taught in Bulgarian during three semesters of full attendance and its objective is to prepare engineer-technologists for production of furniture and woodworking, mainly in production of veneer and plywood manufacturing engineering and solid wood and wooden structures, production of board materials and furnishing residential and public buildings.

5.4 Croatia

Four programmes found (U Murcia)

In Croatia, in the University of Zagreb (Faculty of Forestry), we found or retrieved different Higher Education programmes related to the next field of knowledge: wood technologies, processes or design. In a first stage, before specialisation in a theme within wood-furniture sector,

we must start with the **Bachelor in Wood Technology**. This undergraduate study provides during three years (180 ECTS) a basic learning about wood processing and trade and distribution of wood products, competencies that are required by all types of enterprises. In particular, these are summarized in a certain way: Technical characteristics of wood, basic knowledge on the protection of wood, basic technical knowledge for monitoring and control of machines and transport equipment, training for controlling wood-technological process and the implementation of certain technological operations, participation in the procurement of materials and other equipment, supervision of product quality and quality of work, technical, operational knowledge to guide wood-technological processes.

This regular study is fully qualified to continue with studies at the same Faculty through **Graduate Programs in Wood Technology Processes** or **Design of Wood Products** (two years, 120 ECTS each one):

Graduate Study in Design of Wood Products: students are trained to perform a variety of functions, from product development, quality improvement, design and product construction, outfitting facilities, to presentations at trade shows and product sales.

Graduate Study in Wood Technology Processes: students are capable of the most complex tasks in all types of enterprises engaged in processing, making and selling of wood and consulting and designing companies of this labour sector (i.e. *wood industry enterprises*). They even can work as an associate in research institutions in the field of wood and wood technology, as a leader and collaborator in matters of trade and traffic wood products. Also, they work as a teacher in vocational secondary and similar schools and perform tasks and assignments in journalism and mass media related to the woodworking profession.

Finally, after graduation, students can course in the same Faculty the **MA Technology of Wood Materials - Wood Technology Processes** (two years, 120 ECTS). Thus, they become a specialist in the field of preparation of wood and wood production of materials suitable for general use, construction, furniture and special applications. The peculiarity of this study is to enable students to highly complex technological processes of preparation of the wood drying processes and thermal treatment of wood, wood preparation as raw materials for production of veneer sheets, technological properties and design processes of manufacture of wood material in accordance with modern requirements.

Regarding Croatia's other study programmes (not belonging to Higher Education), results haven't been retrieved in different searches.

5.5 Cyprus

Search responsible: University of Murcia.

Number of programmes found: 1.

In Cyprus, even though a specific qualification hasn't been found, we refer to the next Higher Education program: **Bachelor in Interior Design** (four years, 240 ECTS), offered by School of Architecture, Fine and Applied Arts (Frederick University). This is shifted towards an Architectural orientation and it is also enriched with a broad Fine Art context. It includes two subjects related with furniture and product design and, between occupational profiles of the graduates, we find explicitly furniture/product designers.

No.	Code	Name	ECTS	Hours / week
23	AIND305	<i>FURNITURE DESIGN I</i>	7	3
24	AIND306	<i>FURNITURE DESIGN II</i>	7	3

Regarding Cyprus's other study programmes (not belongs to Higher Education), results haven't been retrieved in different searches.

5.6 Czechia

Search responsible: WULS.

Number of programmes found: 3.

There are two masters and a continuous training program directly related to furniture in Czechia. The last one is hold by Prague Institute and is called **Furniture Design**. Regarding the Master Degrees, both are offered by the Mendel University in Brno and managed by the Faculty of Forestry and Wood Technology. Points in common are the entry requirements (Bachelor Degree), the amount of 120 ECTS, the two years length and the full-time attendance. On one hand, **Furniture Design** outputs are: knowledge of furniture making and design, ability to form and design furniture and eligibility for the management and recognition of creative collective thinking. Almost all its modules are focused on furniture, such as Studio furniture design,

conservation of historic furniture, commercial tropical wood, contemporary furniture design, technical infrastructure of the Interior, or humanization microenvironment, among others.

On the other hand, **Furniture Engineering**, is oriented to furniture production. Its outputs are: knowledge of the technology, materials and techniques of production of furniture, ability of the management team of workers in the furniture industry, ability of making economic estimates in the furniture industry and eligibility for the decision making in the management of furniture companies. Its modules are also focused on furniture as in Furniture Design, but from the production point of view. Those are some examples: The special production technology, furniture store, organization and management of furniture production, applied mechanics, management accounting.

It seems that this two Master Degrees are oriented to educate different profiles of the furniture industry, so they should complement each other very well.

5.7 Denmark

Search responsible: University of Murcia.

Number of programmes found: 4.

In Denmark, we found different Higher Education programmes about this sector, offered by: Aarhus University, Aalborg University, Royal Danish Academy of Fine Arts, and VIA University College.

Aarhus University plans the **Master's degree in IT Product Development** (two years, 120 ECTS) result of the collaboration between Department of Computer Science and Aarhus School of Architecture. It includes several subjects of computer-aided industrial design (in particular, physical design and product design).

Aalborg University organizes two Master's programmes: **Industrial Design and Manufacturing Technology** (two years, 120 ECTS each one). Both programmes are related to engineering, but they include basic learning in wood products: design, construction and development.

VIA University College offers the **Bachelor of Materials Science and Product Design** (3.5 years, 210 ECTS). This course can be defined as the first steps towards becoming a key employee in the textile and furniture business. The programme gives students broad knowledge of materials and processes, including modern processing technology. After graduating, they can be signed up for the next programme: **Academy Profession (AP) Degree in Design, Technology and Business** (specialisation: *Branding and Marketing Management*) (2 years, 120 ECTS). The aim of

this course is providing a broad knowledge of the variety of professions within the furniture, fashion and lifestyle sectors, but from the perspective of design activities mainly.

Architecture and Extreme Environments, realised by The Royal Danish Academy of Fine Arts (2 years, 120 ECTS) is taught in English. This Master programme pursues to explore the intersection between architecture, technology, culture and environment. Through a site-specific approach, we aim to respond to present and future global challenges through 'research by design' and direct 'on-site involvement' in the form of active expeditions to remote world locations where prototypes are put to the test.

5.8 Estonia

Search responsible: University of Murcia.

Number of programmes found: 2.

In Estonia, we discovered two Higher Education programmes offered by Tartu Art College and Tallinn University of Technology. In Tartu, it can be obtained a Diploma of Professional Higher Education, and in Tallinn, a Master of Science in Engineering.

Furniture Design and Restoration, performed at Tartu Art College (4 years, 240 ECTS) is taught in Estonian. This program gives a broad learning in furniture. In the second year, students can specialise in design or conservation/restoration. The design track is oriented to small and medium-size businesses, without excluding collaboration with important industries. Part of the formation is oriented to participate in cooperative projects.

The purpose is to educate specialists in conservation and research of heritage furniture. Students usually collaborate with museums and the National Heritage Board, and they work as designers, conservationists/restorers in public and private sector. Ultimately, many of them continue on postgraduate study.

Technology of Wood and Plastic, performed by Tallin University of Technology (2 years, 120 ECTS), prepares the students for a vocational and professional working in the international engineering industry as a designer/constructor, specialist, industrial engineer or middle manager. This program gives the practical experience necessary to work on furniture projects, material selection and technology development for plastic products manufacturing.

5.9 Finland

Search responsible: University of Murcia.

Number of programmes found: 13.

In Finland, we found five Higher Education programmes offered by Novia University of Applied Sciences, Lahti University of Applied Sciences, South-Eastern Finland University of Applied Sciences and Aalto University; and eight No-Higher Education, performed by Teak Oy, Turku

Vocational Institute, Koulutuskeskus Salpaus, Tampere Vocational College Tredu, Salon Seudun Ammattiopisto and Savonlinna University of Applied Sciences and Adult Education.

The no-Higher Education programmes are as follows. **Upholsterer (Formational Qualification / Adult Education and Training)**, provided by Teak Oy (1 year) is taught in Finnish. The aim of the degree is both to be able to restore or to become an entrepreneur. **Upholstery (Adult Education and Training)**, offered by Teak Oy [Adult Education School] (1,5 years), is also taught in Finnish. The compulsory degree components of interior decoration in the interior design sector include interior work, interior decoration, painting and coating, furniture construction and interior decoration. **Wood Processing (Adult Education and Training)**, performed by Turku Vocational Institute (1,5 years approximately) is taught in Finnish. The aim is to prepare wood and other durable goods or semi-finished products and further products used in construction, as the **Wood Processing (VQ)**, provided by Tampere Vocational College Tredu (2 years, 180 ECVET competence points). **Upholstery (VQ)2**, performed by Koulutuskeskus Salpaus (2 years, 180 ECVET competence points). With this qualification, students may work as upholsterers or interior decorators for the furniture and other industries operating in the field, in small enterprises or as independent self-employed people and entrepreneurs. **Artisan, Crafts and Design (VQ)**, offered by Salon Seudun Ammattiopisto (3 years, 120 credits). Its graduates may work as employees, independent entrepreneurs or self-employed people. **Surface Treatment Tech. (VQ)**, provided by Savonlinna University of Applied Sciences and Adult Education (3 years, 180 ECVET competence points). Those who have completed the qualification may work as painters or floor layers in new or renovation construction or as surface treatment finishers within industry.

Regarding our main interesting programmes, the Higher Education ones, there are two bachelor degrees relatively close to our field: the **Bachelor of Culture and Arts, Designer** (4 years, 240 ECTS) and the **Bachelor of Culture and Arts** (4 years, 240 ECTS), of the Novia University of Applied Sciences and Lahti University of Applied Sciences, respectively. Both are focused to provide a comprehensive understanding of the design process and creative and innovative problem-solving processes. Close in contents is **Artenomi**, offered by South-Eastern Finland University of Applied Sciences (4 years, 240 ECTS), but with a strong content on restoration.

² Vocational Qualification

For its part, **Interior architecture and furniture design**, realised by South-Eastern Finland University of Applied Sciences (4 years, 240 ECTS), taught in Finnish, is thought to form interior architects. Its description is extensive, comprising the interior of the living environment within the entire range of old buildings and new housing, modification and design of public spaces.

Last of the programmes of Finland is the **Master of Arts Product and Spatial Design**, performed at Aalto University (2 years, 120 ECTS). Is taught in English and pursues to educate on design processes, regulations in construction, material knowledge, abilities in 3D composition and understanding of the spatiality of people and products. Also, it gives practice in the broader operational environment of product development, business and culture.

5.10 Italy

Search responsible: COSMOB.

Number of programmes found: 10.

In Italy, there have been found four “para-university courses”: **Technician for research and development in the wood-furniture sector**, of the Fondazione its per lo sviluppo del sistema casa nel made in Italy Rosario Messina; **New technologies for the Made in Italy - Technician for process, communication and marketing in the wood-furniture sector**, of ITS RED Veneto and **COSMOB**; and **Industrial design techniques with eco-sustainable materials, new technologies and 3D printers**, also hold by COSMOB.

Moreover, there have been found ten Higher Education programmes offered by Domus Academy, Nuova Accademia di Belle Arti Milano, Sapienza University of Rome, POLI.design, Scuola Politecnica Di Design, Istituto Europeo Di Design and Italian design academy (Florence). Most of them are private institutions.

Interior and Living Design, performed at Domus Academy (1 year, 60 ECTS) is taught in English. This Master encourages students to consider a wide range of design practices as they learn to shape the space of interiors. Principal learning outcomes are: exploring the contemporary design scene, analysing the marketplace, developing skills of graphic rendering and exploring the factors that determine the economic performance of a brand or company.

POLI.design and Consortium of Politecnico University of Milan hold **Interior Design** (1 year, 60 ECTS), taught in Italian. From its principal units, we have to highlight culture of living, consumption and distribution and materials and technology. It seems to be very similar in contents to **Interior Design for Luxury Living**, offered by Istituto Europeo Di Design in Rome (1 year, 60 ECTS), except is taught in English and it is available in Italy and Spain.

Furniture Design - Design innovation, performed by Italian Design Academy (1 year, 60 ECTS) is taught in Italian. This Master is dedicated to innovation in the field of furniture design. The student explores new possibilities of responses focused on innovation projects. The projects cover the living space, commercial space, product design related to furniture and everyday objects. The project is examined from concept to technological choices, the use of materials and the study of colours.

Industrial Design Engineering and Innovation, provided by POLI.design with Consortium of Politecnico University of Milan, is taught in Italian. This Specializing Master was created to forge capable designers who can manage the entire development of a new product from the initial concept to the manufacturing stage.

Interior Design, performed by Istituto Europeo Di Design (IED Milan) (1 year, 60 ECTS), is taught in English. This Master, offered in Italy and Spain, aims to provide students with the methodological framework, strategic skills and necessary field experience to respond to new trends and future scenarios of Italian and international design. At the end, student is able to deal with the project not only from the technical and formal perspective, but especially from the strategic point of view, focusing on the needs of the contemporary consumer and the evolutionary needs of the sector.

Interior Retail Design and Management, offered by POLI.design with Consortium of Politecnico University of Milan (1 year, 60 ECTS) is taught in Italian. The principal goal is to create the interdisciplinary abilities needed to work in a managerial capacity in the diverse realities that make up the value chain specialized in home furnishing and interior design/decorating.

Interior Design, performed by Nuova Accademia di Belle Arti Milano (NABA) (2 years, 120 ECTS), is taught in English and Italian. This Master deeply explores the issues and the methodological processes related to the design of interior spaces, with the aim of developing professional profiles that are mature, aware, trustworthy and flexible, able to express themselves successfully in the global market of creative jobs.

Product Design, performed by Sapienza University of Rome (2 years, 120 ECTS), is taught in English. It is a studio-based programme for students who wish to hone their ability to innovate. The course encourages creative thinking and critical reflection as fundamental design tools for the development of new objects and ideas to improve people's lives

5.11 Latvia

Search responsible: University of Murcia.

Number of programmes found: 2.

In Latvia, we found one Higher Education programmes offered by Latvia University of Agriculture and one No-Higher Education programme provided by Riga Technical University. Both institutions are public. The No-Higher Education programme is **Woodcraft and Art Summer School**, provided by Riga Technical University (10 days, 2,5 ECTS), taught in English. The Higher Education program is MsC **Wood materials and Technology**, performed at Latvia University of Agriculture (2 years, 120 ECTS), and taught in English. This Master aims to educate highly qualified scientific, educational and management specialists, possessing an ability of make decisions creatively and independently in order to stimulate further growth of the forest sector of Latvia.

5.12 Lithuania

Search responsible: University of Murcia.

Number of programmes found: 2.

In Lithuania, there are two Higher Education programmes offered by Vilnius College of Design/Matosinhos School of Art and Design and Vilnius Academy of Arts. However, it's necessary to clarify that, although both are in *bachelor's studies*, *Interior and Furniture Design* is a higher non-university study, and *Furniture design and restoration* is a university study.

Interior and Furniture Design, performed at Vilnius College of Design (Vilnius) with Matosinhos School of Art (Porto) is taught in English and allows students of both institutions to graduate in 3 years (180 ECTS), with a joint degree in interior and furniture design, and at the

end to obtain a *Joint Professional Bachelor Degree in Arts*. The main goal is to develop interior design professionals with practical skills to apply the acquired knowledge and skills to their personal creative, practical activities and capacities to provide a range of interior, etc.

Furniture design and restoration, performed by Vilnius Academy of Arts (4 years, 240 ECTS), has as purpose to train designers who are able to invent innovative design objects of things and the environment, to deal with creative process, to work in interdisciplinary teams, to participate actively in creative industries, etc. The goal is to educate broad-minded personalities with critical thinking and specialists with general higher education, who are able to creatively use acquired general and professional competences and practical skills which allow them to work in furniture design and restoration.

5.13 Malta

Search responsible: BFM.

Number of programmes found: 2.

In Malta, we found two programmes of no-Higher Education offered by Malta College of Arts, Science and Technology. The first program is called Bachelor of Arts in Product Design and the last one, Advanced Diploma in Joinery, Furniture Design and Manufacturing.

The **Bachelor of Arts in Product Design** (3 years, 180 ECTS) introduces students in the creativity world and prepares them to respond to different cultural and social contexts through product design. Is taught in English. The participants learn how to independently research, form concepts, develop ideas and materialize their designs into physical 3D prototypes, through industry linked projects.

The **Advanced Diploma in Joinery, Furniture Design and Manufacturing**³ (2 years on apprenticeship), is a course which includes theoretical knowledge and extended practical training both off-the-job and on-the-job as part of an apprenticeship or workplace. Participants learn how to analyse and supply solutions to usual joinery and furniture products using solid wood and composites. The practical formation is carried out in workshops equipped to industry standards. Students are expected to participate both individually and in teams to generate solid wood and

³ This course and option were indicated as only ones in Malta after communication with the Malta Furniture Manufacturers Organisation.

composite materials items. At the end, the students have the choice to progress to *Higher Diploma in Restoration of Wooden Artefacts*.

5.14 Netherlands

Search responsible: CETEM.

Number of programmes found: 5.

There have been found five programmes of no Higher Education in the Netherlands. Two are held in the Royal Academy of Art The Hague: **Industrial Design** and **Interior Architecture and Furniture Design**. The remaining three are managed by the Vocational College for Woodworking, Furniture and Interior Design: **Furniture manufacturer**, **Furniture Upholsterer** and **Allround assembly worker timber industry**.

5.15 Poland

Search responsible: WULS.

Number of programmes found: 5.

In Poland, there are two Higher Education programmes offered by Warsaw University of Life Sciences and Poznan University of Life Sciences; and three No-Higher Education programmes provided by Krakowski portal szkoleń, GoWork and Akademia Artystyczna Kappa. These are: **Furniture design**, performed by Krakowski portal szkoleń; **Furniture design**, provided by GoWork; and **Design of furniture and industrial design for the furniture industry**, offered by Akademia Artystyczna Kappa.

About Higher Education programmes, the **Master in Wood Technology**, realized by Warsaw University of Life Sciences (1,5 years, 95 ECTS), is taught in Polish although it's advisable to have some basic English knowledge. Graduates have the knowledge from the sciences, technology, wood and wood products (including engineered wood-based materials), and the economics and organization in wood industry; have comprehensive engineering skills and are prepared to work on the design of technological processes of mechanical wood processing

and wood-chemical processing of wood raw materials and the design and technology of furniture and wood products as well as the management of technological processes.

Furthermore, there is the MA **Design of Furniture**, offered by Poznan University of Life Sciences (1,5 years, 90 ECTS) is taught in Polish. It's focused on widely understood furniture industry with specially emphasized design and planning of furniture production. The graduates will be prepared for work as process engineers responsible for production of furniture (incl. garden furniture), furniture/joinery construction engineers, and furniture designers. They can also deal with designing and organizing production processes, trade of furniture and wood products, logistics.

5.16 Portugal

Search responsible: CETEM.

Number of programmes found: 13.

There have been found 12 courses of various levels of non-Higher Education. Three are planned for young adult's education and are equivalent to 12th grade and level IV of professional qualification. These are taught on the Centro de Formação Profissional das Indústrias da Madeira e Mobiliário, which also holds eight different continuous training courses. Last one, given at Serviço de Formação Profissional de Castelo Branco, is also a continuous training course. This 13 programmes are, each one, focused in very specific and technic knowledge areas, such as operation in machines, technical drawing, finishing techniques, environmental management or applied legislation. Complete list is: **Technician of Management of the Production in Wood and Furniture**, **Technician of Programming and Operation in Machines of Transformation of the Wood**, **Technical Drawing - constructions in Wood**, **CNC milling and multi-cutting operations for Wood**, **Technology and New Materials - Woods and Derivatives**, **Finishing Techniques - Wood and Furniture**, **5S's - Productivity and Quality Instruments**, **Environmental management - wood and furniture industry**, **Legislation applied to the wood and furniture industry** and **Wood finishing and furniture technician**.

Regarding High Education programmes, it has been identified only one Master Degree, "**Product Design Engineering**" of the Polytechnic Institute of Leiria. This 120 ECTS and two years master has no modules directly related to furniture but has been included due to its focus on product design and development.

5.17 Ireland

Search responsible: BFM.

Number of programmes found: 6.

There are four bachelor programmes related to furniture in Ireland. Three of them are Bachelor of Sciences and the other one, of Arts. Apart of these programmes, two of Higher Education have been found.

The first of them is the Master of Arts **Product Design** of the Dublin School of Creative Arts, of 90 ECTS. Furniture Design is one of its fields, among others such as Interior or Industrial Design. Is taught in English and its study mode is full-time, for which is needed a Bachelor Degree (Honours 2.1 or above).

The second one is a Master of Fine Artes developed by the National College of Art and Design: **Product Design**. Given its same name, is not strange to observe certain similitudes, but it is more focused on practice-based modules. Is also taught in English, in two years, although we do not have information about the number of credits.

5.18 Romania

Search responsible: BFM.

Number of programmes found: 6.

Although we could talk about six programmes of our interest in Romania, actually only one of them it is interesting for us. Four are Bachelor degrees, of which one is of furniture, two of wood processing and the last one, of design.

Moreover, one of the masters is related to furniture in an indirect way, so though we mention it, is not of our full interest. We are referring here to the MA "**Design**" of the Bucharest National University of Arts.

Finally, we must emphasize on **Eco-Design of Furniture and Restoration** master, of Transilvania Brasov University. It takes two years and 120 ECTS, is full-time attendance and taught in Romanian. It has 19 different modules that cover from History of the furniture and the woodworking to scientific methods of restoration or modelling. It seems to be very complete on matters relating to the product, but we have not identified anything about its commercialization or company work.

5.19 Slovakia

Search responsible: WULS.

Number of programmes found: 2.

In Slovakia, we found two Higher Education programmes offered by Technical University in Zvolen. First of them is **Creation and design of furniture** (2 years in full-time, 120 ECTS / 3 years in part-time, 180 ECTS), taught in Slovak. A graduate of engineering studies in the field design can control complex technological processes of wood processing and furniture production with regard to the efficient utilization and valorization of wood raw material. It ensures innovation in the process of creating new functional and safe products, especially furniture and interior elements.

The second one is **Furniture and Interior Design** (2 years, 120 ECTS), taught in Slovak. The graduate has the theoretical and practical knowledge based on design studies and develops the ability to apply them in a self-study or further study. The student integrates creative abilities with theoretical and practical knowledge from the area of furniture and interior design. Through its work, it contributes to a better satisfaction of the utilitarian and aesthetic needs of man and to the humanization of the environment.

5.20 Slovenia

Search responsible: CETEM.

Number of programmes found: 7.

In Slovenia, there are two Higher Education programmes offered by University of Ljubljana and University of Maribor, and five No-Higher Education, performed by Higher Vocational College Wood Technology School Maribor, and Biotechnical Faculty in University of Ljubljana.

The No-Higher Education programmes are **Wood processing**, provided by Higher Vocational College Wood Technology School Maribor; **Design of materials**, realized by Higher Vocational College Wood Technology School Maribor; **Technologies of wood and fibre composites**, performed by Biotechnical Faculty in University of Ljubljana; **Wood Engineering**, offered by

Biotechnical Faculty in University of Ljubljana; and **Wood Science**, imparted by Biotechnical Faculty in University of Ljubljana.

Regarding the Master Degrees, **Product Design** is offered by University of Maribor (2 years, 120 ECTS) and is taught in Slovenian. Master's study program Product Design is a study program from the field of industrial design, based on the "from inside out" method, which on one side integrates the scientific methods from mechanical engineering into a product on different stages of the design process with simultaneous awareness of responsibility for cultural and social development.

Besides, **Wood Science Timber Engineering** is performed at University of Ljubljana (2 years, 120 ECTS). It's required to have Slovenian and English knowledge. The study program is designed with the aim of educating experts capable of solving the most demanding research, developmental, technological, organizational and leadership tasks and challenges in the field of wood science and technology and related fields and, in accordance with contemporary challenges, to ensure the all-round development of the profession, which, in addition to preserving and exploiting the rich tradition, needs the capacity to adapt to new technological and economic guidelines. Masters are educated in overall and in-depth understanding, critical judgment and the use of theoretical knowledge in practice

5.21 Spain

Search responsible: CETEM.

Number of programmes found: 18.

Programmes found in Spain may differ from other countries in some aspects. First, there are no "Master of Arts" or "Master of Science" differentiation, official postgraduate programmes are "Master", encompassing both. Secondly, there are significantly more no-Higher Education programmes than Higher Education ones. This may be because of woodworking tradition on the country, traditionally more oriented to practical learning than academic courses.

Knowing that, there are 15 no-Higher Education programmes, two masters and one postgraduate. Of the firsts, 11 are directly related to furniture, with four of them focused on carpentry and other four on design. Only two institutions hoard all the courses, AIDIMME (8 of them) and project partner CETEM (7).

On the other hand, the two masters share many characteristics between them. Both take one course and 60 ECTS, are taught in Spanish by attendance regime and full-time study mode. Also, entry requirements are similar, it is needed a graduate in design, architecture, engineering or plastic arts.

One is more focused exclusively on furniture, meanwhile the other one covers product design. The first one, **Master in Furniture Design** is a common programme between Pompeu Fabra University and ELISAVA Barcelona School of Design and Engineering. Its strength points are design, materials and making processes, albeit it has not modules of business or company internship, which could be identified at weak spots.

The Istituto Europeo di Design Madrid offers the **Postgraduate Course in Furniture Design** and the **Intensive master of Product Design**. As it is said above, is less focused on furniture than the master of the Pompeu Fabra, although furniture is understood as product and developed like that.

5.22 Sweden

Search responsible: University of Murcia.

Number of programmes found: 3.

In Sweden, 3 programmes related to furniture industry have been identified. The first, taught in University of Gothenburg by the Academy of Design and Crafts (HDK), is the BFA **Programme in Wood Oriented Furniture Design**. Entry requirements are very subjective, based on work samples and a personal interview, which grant access to a 3 years full-time attendance and 180 ECTS program. Is the only one of the three programs of Sweden offered in Swedish, although is mainly taught in English. It is structured on three modules (one each year): technology, materials and design; socio-cultural context; and exchange programme.

The second programme is the MA **Spatial Design** of the Konstfack University College of Arts, Crafts and Design. This 2 years and 120 ECTS programme train on both Interior Architecture and Furniture Design and grants access to doctoral level. Is taught in English, so it is need to prove a proficiency in that language equivalent to Swedish upper secondary school course.

The third programme is also from Konstfack University College of Arts, Crafts and Design: **Individual Study Plan in Design**. Although is considered at Master Degree level it is not regulated like that. Instead, is an opportunity for the students to develop on product, service or furniture design. It also grants access to doctoral level and it is in English.

5.23 United Kingdom

Search responsible: BFM.

Number of programmes found: 29.

United Kingdom is the areas where most programmes have been found. Maybe it is because two of the partners of IM-FUTURE are British and we have more accessible information, but we cannot forget its great tradition on furniture and wood processes. 29 programmes have been identified, 25 of which are of Higher Education. From the remaining four, three are Bachelor degrees and one last, a mix of foundation and work related degrees. These non-Higher Education programmes are focused on design.

Turning back to our main objective, we must specify some details of these Higher Education programmes, as their geographical distribution: 17 on England, six on Scotland and two on Wales. 15 are Masters of Arts, usually named or related to “Product Design”, of which six are specifically focused on furniture design. The same denomination appears on some of the eight Masters of Science taught. We find also three Masters of Fine Arts, four Post Graduate Certificates and four Post Graduate Diplomas. These last two kind of postgraduates are both related to Masters of Science, also.

The variety of titles exposed entails variety of studies duration and credits. From 60 to 240 credits, although many are of 180 credits, from 1 year to 4. Even that most are 1 year, it depends if its full or part-time and the modules of the program. In this sense, we only can assure that there are too much differences for similar field programmes. That is understandable if there were diverse regulations affecting, such as it happens with furniture studies across the European Union (even that it is supposed to be a joint effort on regularization), but it could be a problem for students to choose a program, or for companies to select a graduated. This is more obvious if we take our time ascertaining the exit profiles for each program, particularly relevant to the last mentioned. Thus, product design, taking attention to materials or new technologies, is present in most of them, but a few offer formation on business, on mechanical or electronic engineering, socio-cultural issues, entrepreneurial skills, digital prototyping, etc.

On the opposite, entry requirements are very similar between them and well structured, oscillating between a 2.1 and a 2.2 or above Bachelor’s Honours Degree and, of course, a good English level – IELTS 6.0 or superior.

Regarding the institutions, only Nottingham Trent University and Aston University have more than one program, specifically, two. The rest have one each. Complete list of institutions (in alphabetical order) and programmes (linked) is as follows⁴:

- Aston University: MSC [Product Design Enterprise](#), MSC [Product Design Innovation](#).
- Birmingham City University: MA [Product and Furniture Design](#).
- Bournemouth University: MSC [Product Design](#).
- Brunel University London: MSC [Integrated Product Design](#).
- Buckinghamshire New University: MA [Art & Design Practice \(Furniture Design\)](#).
- Cardiff Metropolitan University: MSC/PgC/PgD [Product Design](#).
- De Montfort University: MA [Product Design](#).
- Edinburgh College of Art: MA [Product Design](#).
- Edinburgh Napier University: MA/MD [Product Design Prototyping](#).
- Glasgow School of Art: MSC [Product Design Engineering](#).
- Kingston University: MA [Product and Furniture Design](#).
- Manchester School of Art: MA/MFA [Design: \(Furniture\)](#).
- Nottingham Trent University: MA [Furniture and Product Design](#), MA [Product Design](#).
- Royal College of Art: MA [Product and Furniture Design](#).
- Sheffield Hallam University: MA/MFA [Design \(Product\)](#).
- University for the Creative Arts: MA [Product Design](#).
- University of Central Lancashire: MA/PgC/PgD [Product Design](#).
- University of Dundee: MSC [Product Design](#).
- University of Glasgow: MSC [Product Design Engineering](#).
- University of Hertfordshire: MA/PgC/PgD [Product Design](#).
- University of Strathclyde: MSC/PgC/PgD [Product Design](#).
- University of Wales Trinity Saint David: MA [Product Design](#).

⁴ Due to the elevated number of programmes existing in the UK, we have decided to extract the information and post the list of everyone. More information is available in the folders of the Project and following the links.

6 International Master's degree for the Furniture and Wood Working Sector

The aim of "IM-FUTURE" is to develop the content for an International Masters' Degree in the furniture sector and this document has been put together to support feedback received from the industry as a discussion document for the partners.

This document compliments the 'Report on the Furniture and woodworking Industry: academic programmes' produced by the University of Murcia

This document contains competences and outcomes for the main functions within organisations in the furniture & wood sector. The ultimate aim is to reduce the content - based on industry feedback - to the needs of the sector. The course would then allow students to acquire the capability to apply or use a set of related knowledge, skills, and abilities required to successfully perform 'critical work functions' or tasks in defined work settings.

6.1 Qualifications required to undertake course

A postgraduate degree or demonstrable experience in a management position or other critical role in a furniture or woodworking organisation. The applicant must demonstrate good communications skills and understanding of mathematics & data analysis.

6.1.1 Professional competences

Students will cover the following competences and demonstrate they have acquired skills and knowledge in each of the outcomes.

6.1.2 Production Engineering

Represents the knowledge, skills, and abilities needed for a production engineer.

Outcomes – to demonstrate an understanding of:

- Material properties, construction, product development including proto-types
- Production technology, production optimisation
- Production organisation and business administration
- Mechanical engineering and automation
- Maintenance management and tracking programs
- Eco-sustainability including 'design-for-life'

6.1.3 Production Scheduling & Planning

Represents the knowledge, skills, and abilities needed for a production scheduler and planner.

Outcomes – to demonstrate an understanding of:

- Master planning
- Production planning
- Planning processes
- Sales and operations planning
- Demand management and forecasting
- Strategic sourcing and purchasing
- Capacity management
- Scheduling techniques and control
- Master production schedule and final assembly schedule
- Risk management

6.1.4 Operations / Business / Process Management

Represents the knowledge, skills, and abilities needed for operations management and process improvements.

Outcomes – to demonstrate an understanding of:

- Business management
- Operations strategy
- Manufacturing & finishing process environments
- Standards (time measurement)
- Process improvement and six sigma (statistical analysis tool)
- Lean management
- General sustainability
- Identifying & eliminating causes of quality & process variations
- Optimisation - systematic approaches to close process/system performance gaps
- Continuous improvement - establishing key performance measurements, benchmarking metrics
- Recycling opportunities

6.1.5 Innovation, Product and Process Improvement Systems

Represents the knowledge, skills, and abilities needed for innovative approaches to product and process.

Outcomes – to demonstrate an understanding of:

- Technological surveillance & information management
- Innovation management & systems

6.1.6 Logistics, Warehouse, Distribution & Supply Chain Management

Represents the knowledge, skills, and abilities needed for logistics operations, warehousing, distribution and management of the supply chain.

Outcomes – to demonstrate an understanding of:

- Transportation, distribution, logistics
- Warehousing
- Distribution requirements planning, Inventory management
- Demand management and forecasting
- Enterprise resources planning and manufacturing resource planning
- Security and hazardous materials regulations
- Dispatching
- Risk management
- Warehouse management systems
- Supply chain management and synchronisation
- Vendor managed inventory
- International regulations
- Locating facilities
- Strategic sourcing and purchasing
- Business and supply chain strategy
- Applying lean and six sigma tools

6.1.7 *Materials Management*

Represents the knowledge, skills, and abilities needed for managing materials and interfacing with suppliers and in-house personnel.

Outcomes – to demonstrate an understanding of:

- Converting demand requirements into schedules for inventory acquisition
- Calculate key inventory performance metrics
- Inventory management
- Communications with suppliers and with company departments
- New materials
- Sustainability

6.1.8 *Quality Control*

Represents the knowledge, skills, and abilities needed for controlling quality.

Outcomes – to demonstrate an understanding of:

- Principles of Total quality management (TQM) – customer – supplier interface
- Quality improvement tools - six sigma/ flowcharts/ Pareto charts/cause-and-effect diagrams/control charts/check sheets/scatter diagrams/histograms
- Continuous improvement
- Statistical techniques
- Standards registration

6.1.9 *Purchasing*

Represents the basic knowledge needed to understand the purchasing function.

Outcomes – to demonstrate an understanding of:

- Internal demand analysis
- Market analysis
- Strategy development
- Supplier analysis
- Negotiation
- Contract management
- Supplier assessment & development
- Change management
- Optimization of purchasing process

- Network building

6.1.10 Business Finance

Represents the basic knowledge needed understanding the business finance function.

Outcomes – to demonstrate an understanding of:

- Financial Accounting and Reporting
- Cost Accounting and Management
- Business Planning
- Management and Reporting Analysis
- Accounting Information Systems
- Tax Accounting

6.1.11 Sales

Represents the basic knowledge needed to understand the sales function.

Outcomes – to demonstrate an understanding of:

- Develop, assess and implement national international sales strategies
- Analyse, assess and apply methods and tools to support the sales performance
- Assess the competitive position of a business
- Substantiate and communicate the chosen strategies into a sales plan
- Create a motivating environment

6.1.12 Marketing

Represents the basic knowledge needed to understand the marketing function.

Outcomes – to demonstrate an understanding of:

- Advertising and Sales Promotion
- Branding and Positioning
- Content Marketing
- Customer Experience Management
- Customer Relationship Management
- Digital Marketing
- Event Management
- Integrated Marketing Communications

6.1.13 International Trade

Represents the basic knowledge needed to understand exporting.

Outcomes – to demonstrate an understanding of:

- International Trade
- International Joint Ventures
- Legal Aspects of a Global Business
- Transportation Techniques and Management
- Strategic Marketing
- Research – identifying market & country
- Market entry
- The export plan
- Etiquette
- Local sources for help and support

6.1.14 Human Resources & Conflict Management

Represents the basic knowledge needed of the HR process and how to deal with conflict issues should they arise in an organizational setting.

Outcomes – to demonstrate an understanding of:

- People & negotiating skills
- Legal compliance
- HR Processes
- Conflict management and resolution

6.1.15 Training Needs Analysis/Manpower/Succession Planning

Represents the basic knowledge needed analysing training needs, setting manpower & succession plans.

Outcomes – to demonstrate an understanding of:

- Manpower Analysis
- Person Analysis – individuals and instructors
- Work analysis / Task Analysis
- Performance Analysis
- Content Analysis
- Training Suitability Analysis
- Cost-Benefit Analysis
- Succession planning of internal talent to meet those future needs
- Preparing plans to present to Directors

6.1.16 Fundamentals of Design & Furniture Design History

Provides the individual with basic knowledge of design and the designer's role.

Outcomes – to demonstrate an understanding of:

- The fundamentals of design
- The design process
- Materials & making - themes in design history
- Eco-design
- Role of designer within the manufacturing process
- Design systems (combined with fundamentals of enabling technologies and CAD)
- Modelling to test suitability (proto-types)

6.1.17 Fundamentals of Making & Finishing

Provides the individual with basic knowledge of the various making and finishing processes in the furniture and wood industry.

Outcomes – to demonstrate an understanding of:

- Tools and equipment used
- How and where components are used
- Appropriate equipment to cut materials within acceptable tolerances
- The principles of joints used in making hand-crafted furniture
- Uses and applications for veneers and laminates

- Finishes in the production process including stains, veneers, laminates etc.
- Sequence of assembly
- Measure and mark out materials to specification
- Grit sizes and the process of sanding
- Positioning of components and application of cramps
- Preparation and assembling components to specification
- Types, methods and processes involved in gluing
- Uses for jigs and templates for furniture production
- The edge banding process
- Fitting mechanical or electrical components to furniture
- Rectification or rework
- The various finishing processes – manual and machine
- Safe handling and storage

6.1.18 Fundamentals of Standards – Regulatory & Technical

Provides the individual with basic knowledge of the various national and international standards and regulations that affect the industry.

Outcomes – to demonstrate an understanding of:

- The importance of standards & regulations and legal standing
- The particular local standards & regulations affecting the furniture & wood sectors
- The particular European and international standards & regulations affecting the furniture & wood sectors
- Sources for acquiring standards and regulations
- Intellectual property rights

6.1.19 Fundamentals of Health / Safety / Environmental Laws

Provides the individual with basic knowledge of the various national and international health, safety and environmental laws as they affect the industry.

Outcomes – to demonstrate an understanding of:

- The importance of health, safety and environmental laws
- The particular local health, safety and environmental laws affecting the furniture & wood sectors

- The particular European and international health, safety and environmental laws affecting the furniture & wood sectors
- Sources for acquiring health, safety and environmental laws
- Recognition & Evaluation of Risks
- Risk Control & Communication
- EHS Systems & Knowledge

6.1.20 Fundamentals of Enabling Technologies

Provides the individual with basic knowledge of the various Key Enabling Technologies that can improve production, process and administrative functions.

Outcomes – to demonstrate an understanding of:

- Materials requirements planning systems
- Manufacturing resource planning systems
- Sales Order Processing systems
- 3-D visualisation
- 3-D printing (proto types)
- Computer aided design (CAD)
- Computer Aided Manufacture including cutting optimisation systems
- Enterprise Resource Planning
- Production Management Information Systems
- Inventory Control Systems
- Warehousing and Distribution Systems
- Integrated Manufacturing and Distribution Systems
- Customer relationship management systems
- Integrated Accounting Systems
- Internet of Things

6.1.21 Fundamentals of Entrepreneurship

Provides the individual with basic knowledge to set up their own business.

Outcomes – to demonstrate an understanding of:

- Analyse entrepreneurial and market potential
- Build the business idea

- Developing the marketing approach
- Plan the operations
- Plan the budget
- Create the business plan
- Sources of help and funding

6.2 Personal competences

6.2.1 Workplace and Leadership Competencies

Represent those skills and abilities that allow individuals to function in an organizational setting

- Problem solving and decision making
- Teamwork and collaboration
- Accountability and responsibility
- Customer focus (internal and external)
- Planning and organising
- Conflict management
- Supporting and training staff

6.2.2 Personal Effectiveness Competencies

Represent motives and traits as well as interpersonal and self-management styles and generally are applicable to a number of industries at a national level

- Awareness of the needs of others
- Integrity
- Effective communication
- Interpersonal skills