

Consortium Masters

IO₁A₁ – IM-FUTURE

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Introduction

Master of Science degree for furniture sector may be understood and prepared in numerous ways. Again, Furniture sector may be understood as a product design sector, machining sector which prepares machinery and other items/facilities for production, or factories producing furniture itself. This arises many other questions – Who potentially is proper and needed MSc for this sector – designer, manager, mechanical engineer, ergonomists, chemist, environmentalist or maybe technologist? Aim of this paper is to summarize and compare educational offers of IM-FUTURE consortium members, leading to MSc diploma for Furniture Sector

Consortium masters

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, University of Murcia and other parties, such as 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: 60 ECTS.

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, 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 and practices in companies.

Course is finalized by Master Thesis.

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 the 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.

BUCKINGHAMSHIRE NEW UNIVERSITY – ENGLAND

Bucks NU 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.

- 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.

WULS - POLAND

In opposite, 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 a 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.

Comparison of the courses

BASIC COMPARISON

Following table presents focused comparison of educational offers:

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	60	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
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CONTENT COMPARISON

Following table presents short course content comparison

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

Summary

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 brandless 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.