

Transilvania University of Braşov, Romania

Study program: Furniture Eco-Design and Restoration

Faculty: Wood Engineering

Study period: 2 years (Master)

1st Year , 1st Semester

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
History of Furniture. Authentication and Evaluation	IMAE	5	2	-	2	-

Course description (Syllabus): The discipline aims at building up the knowledge that allows students to understand, recognize, evaluate and authenticate correctly important historic furniture belonging to the most significant periods of the European arts. The students are expected to understand and identify the close relation of historic furniture with the arts, crafts, materials, structures and techniques specific to the 11th – 18th century. They are also expected to acquire a good knowledge of the shapes, structures, materials and ornaments of historic furniture, as well as of the significant works of well-known cabinet makers. The laboratory works are dedicated to acquiring the skills of drawing views, cross sections and structural as well as ornamental details of important historic furniture, which is going through a process of authentication and evaluation.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Product Eco-Design 1	ECOD1	6	2	-	-	2

Course description (Syllabus): The discipline aims at building up and developing the knowledge regarding sustainable development and planning of the product eco-design steps, from raw materials, processing and technology to secondary processing and finite product. The second part of the discipline develops knowledge regarding furniture eco-design, starting with creativity development and ending with life cycle design and ecological marketing.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Traditional and Modern Materials and Structures for Furniture	SMTMM	5	2	-	1	1

Course description (Syllabus): The discipline presents traditional as well as modern materials for furniture and interior design. Traditional materials include those which are now parts of national heritages, created and used during history by different people worldwide (people from Europe, USA, Asia, Australia and Africa). Materials such as wood, leather, metals, ceramics, vegetable knitting and tissues are presented with respect to the specific folk-tradition. Modern materials include various new composites, plastics, metals and natural and synthetic glass.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Elements of Restoration Theory and Conservation of Cultural Heritage	ETRCPC	4	1	-	1	-

Course description (Syllabus): This course is organised in two parts. The first one aims at offering a deeper insight into the present, internationally acknowledged, complex concept of scientific conservation and restoration, with specific phases, principles and ethical aspects, while the second one deals with the main aspects of cultural heritage as definition, classification and conservation. The theoretical aspects are generously exemplified by study cases, while documentation visits to museums and conservation-restoration laboratories are organised as practical activities for a

better understanding of these specific topics and to reach a high level of consciousness related to the importance of cultural heritage conservation and the complex scientific, ethical, social and cultural approach implied. Syllabus: Introduction: course structure and importance. Theory of conservation-restoration – present concepts and international organisms; Restoration principles and code of ethics; Case studies; Cultural heritage: definition, importance, classification, examples; Mobile cultural heritage and historic monuments; Legislation of cultural heritage conservation; Norms of preventive conservation: mobile cultural artefacts and historic monuments; UNESCO Cultural heritage and international legal issues.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Wood Civilisation	CIVL	4	1	-	-	1

Course description (Syllabus): The discipline aims at building up the knowledge of the evolution of wood crafts, from ancient times to nowadays. Therefore ancient, medieval and Renaissance aspects of wood crafts are presented, together with construction and assembling techniques, specific to various civilizations. The practical works take place mainly in ethnographic museums, as study cases and valorisation proposals, and aim at a good knowledge of Romanian traditions and techniques as expressed in wood, available to the modern designer.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Professional Internship 1	PRP01	6	-	-	-	12

Course description (Syllabus): In-field documentation and portfolio of original concepts: identification of cultural values of a community or Practical work (for solving a given task) in a factory / workshop specialised in furniture design / furniture production / furniture marketing / restoration of wooden objects.

1st Year, 2nd Semester

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Colour Theory with Applications in Design and Restoration	TCDR	3	1	-	2	-

Course description (Syllabus): The course aims at developing the knowledge of colour in the context of space and object: colour theories, chromatic schemes, contrasts and harmonies, the expressive character of colour, colour and light, colour in architectural spaces, colour compositions, rules and principles. The laboratory works are structured in order to enable the student to see, feel, organize and develop colour in the architectural space, together with the necessary assignments regarding colour practice.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
CAD Design	CAD3M	5	2	-	1	-

Course description (Syllabus): Introduction in SolidEdge program. SolidEdge design environments. Modelling a Part. Drawings generating, stages, structure of the Part Modelling. Modelling a Part. Feature modelling. Modelling a Part. Feature construction procedures. Building an assembly. Creating and editing the 2D drawings. Motion environment – mounting and animation.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Ethics and Academic Integrity	EIA	2	1	-	-	1

Course description (Syllabus): Ethics in learning. Ethics in research. Ethics in business. Intellectual property. Plagiarism. Academic integrity.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Professional Internship 2	PRP02	6	-	-	-	12

Course description (Syllabus): Advanced documentation in a chosen thematic area aiming at: development of the valorisation concepts (sketches, ideas, propositions) previously formulated (PRP-01): analysis of different variants; prefiguration topic and concept of dissertation and identification of the dissertation coordinator. Specialised professional practical activity (in correlation with the field/ thematic area) – professional internship in specialised laboratories/ateliers/workshops/ companies.

ELECTIVE COURSES

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Architectural Space 1	SA1	5	2	-	-	1

Course description (Syllabus): The discipline aims to develop the knowledge of architectural creation models, as well as the understanding of the architectural space as a transformation of nature into a human world, as a physical space with human significations. The students are expected to develop skills to design the architectural space, structurally, functionally, symbolically and aesthetically well balanced.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Scientific Investigation Methods for Conservation-Restoration	MISR	5	2	-	1	-

Course description (Syllabus): The course aims at deep understanding of the concepts of initial conservation state and scientific investigations for restoration purposes and their importance, as well as at formation of cognitive and practical abilities for a correct and comprehensive analysis of the artefacts with the view of their conservation-restoration by direct observation and physical, chemical and modern physical-chemical methods of investigation, as individual methods or parts of an integrated investigation system. Course content: Introduction: course structure and importance; The initial conservation state – conservation levels; Initial evaluation and preparation of the object for investigation; Scientific investigation – importance, goals, methods applied and general requirements; Physical methods: special photographic techniques, microscopy, X-ray based methods; Spectroscopy; Integration of the investigation methods – the analytical protocol of investigation; Identification of wood species; Identification of coating materials, Investigation of polychrome wood; Case studies.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Furniture Design and Basics of Ergonomics	DMEE	6	2	-	-	2

Course description (Syllabus): The discipline aims to get an insight into the ergonomic interaction between the human being and surrounding objects, mainly furniture. The variable anthropometry in correlation with specific ergonomic requirements for different types of furniture is considered in the process of design including: modular systems, furniture for children, for elderly and people with physical disabilities, office furniture, design of domestic and public spaces. Project works with master students are meant to implement the theoretical knowledge into practice, ending with models, posters and oral presentations, as means of argumentation for the originality of design and ergonomic issues.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Science of Materials for Conservation and Restoration	SMURC	6	2	-	2	-

Course description (Syllabus): The course offers advanced knowledge of the main types of materials for bio-protection, consolidation, gluing and traditional finishing, which are employed in active conservation and restoration of furniture and old wood artefacts, from the point of view of composition, properties, preparation and utilisation, as well as in-time behaviour of these materials, their ageing and degradation. Course content: Introduction: course structure and importance. Classification of materials for conservation – restoration; Basic chemistry of materials for conservation-restoration; Polymers – structure and properties; Preservation materials and methods; Consolidation principles and materials; Adhesives; Natural finishing materials; Dyes and pigments; Solvents; Compatibility aspects; Natural and artificial ageing of materials.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Cultural identity and Wood Crafts Traditions	ICTL	3	1	-	-	1

Course description (Syllabus): The discipline is developing knowledge regarding aspects of Romanian cultural identity as reflected by traditional crafts, mainly expressed in wood but also other related materials. The subject of traditional wood crafts integrates strongly into the contemporary context and carries along the respect of historic values as well as the innovative values of their creative interpretation and value-added message.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Elements of Wood Anatomy, Physics and Mechanics for Restorers	EAFM	3	1	-	1	-

Course description (Syllabus): The discipline will contribute to acquire an advanced knowledge of the macroscopic and microscopic structure of wood and of the main physical and mechanical properties, as a basis for understanding their consequences on the in-time behaviour of wood/ wood artefacts; understanding the wood degradation and natural ageing phenomena. Case-studies on old wood/ historic furniture objects will also be carried on.

2nd Year , 3rd Semester

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Professional Internship 3	PRP03	5	-	-	-	12

Course description (Syllabus): Practical specialized activity in correlation with the area of specialization and envisaged topics of dissertation with the view of consolidating the necessary knowledge and practical skills. Practical work in specialised factories / workshops specialised in furniture design / furniture production / furniture marketing / restoration of wooden objects.

ELECTIVE COURSES

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Architectural Space 2	SA 2	4	1	-	-	1

Course description (Syllabus): The discipline aims at building up the knowledge of object composition, of fundamental elements that define space as well as their effects. The students are expected to develop organized space compositions, well defined by basic and complex relations. The laboratory works are drawing and modelling exercises regarding space composition and definition, space interpretations and reconfigurations of interior and exterior spaces.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Structural Consolidation and Restoration of Upholstered Furniture	CSRM	4	1	-	1	-

Course description (Syllabus): The discipline introduces the tools, devices and materials used in restoration techniques of all kind of carved elements and gives keys of root cause analysis of the degradation phenomena, helping the students to make an accurate diagnose and concept of restoration, which is applied in practice using adequate techniques and methods.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Product Eco-Design 2	ECOD 2	6	2	-	-	2

Course description (Syllabus): The course develops the knowledge of recent research concerning furniture eco-design, made mainly of wood and wooden materials. It develops actual and future directions in wood secondary resources valorisation and discusses the alternatives of European eco-product politics regarding wood composites, adhesives, colouring and finishing products, as well as energy saving technological processes. The practical works are furniture eco-design projects, with viewing the main aspects of sustainable design.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Restoration of Finishes and Antique Patina Imitation	RFTA	5	2	-	2	-

Course description (Syllabus): Several aims are pursued by this discipline: knowledge of materials and old techniques for wood finishing, knowledge of materials for patina and antique finishing techniques. Antiquing can be used for old furniture restoration or for bring a touch of character to new pieces of furniture. The content of the course covers the following issues: types of finishes and their history, factors and phenomena specific for finishing films, film defects, main operations for finishing restoration, materials for wood finishing, finishing techniques using old materials as shellac, wax, oils or other modern synthetic materials, patina and aging techniques, antique finishing techniques, distressing techniques.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
New Trends in Furniture Design	NTDM	4	1	-	-	1

Course description (Syllabus): The discipline is aiming to bring together the most recent advances in materials and design trends used by contemporary designers and successful design companies for furniture and indoor architecture. It reviews a new series of eco and sustainable materials, novel structures and composites with enhanced flexibility for design, recycled as well as non-conventional new materials used for configuring high-tech or functional-decorative furniture and ambient design. New trends in furniture design are reviewed together with their designers and host design companies. Project works with master students, ending with models and posters and disseminated in oral presentations, are meant to develop the scientific interest for material research and its implementation into furniture with original design or inspired from an acknowledged trend of a successful contemporary designer.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Tradition and Innovative Techniques for Furniture Decoration	TTIOM	4	1	-	1	-

Course description (Syllabus): The discipline presents the traditional materials and techniques of veneering and decorating the art furniture by intarsia and marquetry, giving deepening knowledge of wood carving techniques, also. The discipline also introduce the tools, devices and materials used in restoration techniques of all kind of carved elements and gives keys of root cause analysis of the degradation phenomena, helping the students to make an accurate diagnose and concept of restoration, which is applied in practice using adequate techniques and methods. The

course is structured on two main chapters: Restoration of veneered furniture, intarsia and marquetry; **Carving** and carved furniture restoration.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Eco-Certification and Toxic Emissions in Wood Industry	ECN	4	1	-	1	-

Course description (Syllabus): The course provides knowledge regarding the concrete requirements of sustainable processes and products in the field of wood industry. It starts with the concept related to certification of products and chain of custody, principle, criteria and requirements, in order to provide benefits such as access to new markets. Formaldehyde emissions and other sources of pollutants, environmental health and safety regulations in wood products manufacturing processes also, are presented. Case studies, quality control and emissions measurement methods are debated in the laboratory activities.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Virtual Restoration	RV	4	1	-	1	-

Course description (Syllabus): The course "Virtual restoration" is centred upon the development of skills regarding 2D and 3D modelling of furniture which is destined for restoration. Realistic images of these objects have to be computer-generated, missing or deteriorated structural or ornamental elements have to be modelled, specific curves have to be re-generated. The laboratory works are meant to exercise the computer skills which enable students to enhance the quality of their restoration practice.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Experiment Design and Analysis of Experimental Data	PEADE	4	2	-	2	-

Course description (Syllabus) The course deals with basic knowledge of descriptive and inferential statistics with application in wood industry. During the descriptive statistics lessons the students learn about techniques that are used to organize experimental data in tables (frequency tables) and to present the results using charts (histogram, bar graph, frequency polygon, box plot etc.). Also, the students learn about measures of central tendency (mean, median and mode) and variability (range, variance, standard deviation and coefficient of variation). During the inferential statistics lessons the students learn about tests that are used to compare groups (t test and analysis of variance (ANOVA)), correlations and regression analysis. In addition, the students learn the main steps needed to design an experiment from statistical point of view. Moreover, the course presents some case studies about application of statistic to design wooden products and optimize a technological process.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Restoration of Polychrome Wood	RLP	4	2	-	2	-

Course description (Syllabus): The course aims to get an insight into the art and history of polychrome wood by discussing the traditional techniques of painting and gilding wood surfaces, as well as their background of tools and materials, as basics of knowledge required for their conservation and restoration. Course content: Painted furniture from historic perspective; Traditional materials and techniques for wood painting; Specific defects; Specific conservation-restoration methods; Gilded wood - materials and traditional techniques; Preventive conservation; Case studies. Laboratory works are practical applications on relevant artefacts.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Modelling and Prototyping	MMP	4	1	-	1	-

Course description (Syllabus): The discipline is an entirely practical course, where students are meant to apply and develop their skills for building functional scale models, mock-ups and furniture prototypes. They use various materials, check-up size, dimensions, form, proportion, colour, various techniques and technologies, becoming able to finalize, evaluate judiciously and improve the visual, functional and technical qualities of the piece of furniture they have designed and built.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Case Studies	CAZ	4	1	-	2	-

Course description (Syllabus): The discipline is a practical course, where students are meant to apply and develop their restoration knowledge and skills together with prestigious experts from museums, through direct work with the object. They are involved in all phases of the restoration, including the documentation for cultural goods made of wood and other materials, according to the principles and rules of this activity, as well as the technological process of restoring historical objects.

2nd Year , 4th Semester

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Practice and/or Scientific Research	PPD	15	-	-	-	14

Course description (Syllabus): This activity is meant for the documentation, study, design and/or research work necessary for the dissertation thesis.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Development of Dissertation Thesis	ELD	15	-	-	-	14

Course description (Syllabus): This activity is meant for the development, finalizing and writing the dissertation thesis.