

6000 - Industrial Design Technology 1: General properties of materials (strength, compression, shear, hardness, ductility, impact resistance, fatigue resistance). Particular properties of manufacturing materials grouped as: wood, paper, leather, plastics, metals, ceramics, and composites.

6001 - Theory of Form 1: Definitions of shape and form. The discourse of form. Geometry and the modelling of form. Use and objectivation of geometric forms. Analogies in product design (the biological, mechanical, and linguist analogies in design). Visual rhetoric in design. Criticism as a creative tool. The historical conception of objects. Product Life Cycle and Design Life Cycle.

6002 - Introduction to Industrial Design: Definitions of design. Similarities and differences among Art, Handcraft and Design. Definition of industrial design. Professional profile and areas of expertise within Industrial Design. Fields of action within Industrial Design. Brief review of the Industrial Design scenario in Venezuela. The object as a design product. Culture, society and consumption.

6003 - Graphic Techniques for Communication 1: Bi-dimensional Geometry. Descriptive Geometry. The human figure. Colour, texture and material. Project presentation (composition and layout of presentation sheets). Design drawings (the orthographic projection, the sectional view, the exploded view). Graphic techniques (pencil crayons, markers, pastels, water-soluble paints). Scale and measured drawings. Technical drawing standards.

6004 - Methodology for Creativity: Elements of Logic. Creativity and creative process. Creative visualization. Techniques for the creation of ideas and problem solution. Industrial Design as a systematic creative process.

6005 - Model Making and Prototyping Workshop 1: Key concepts on model making. Types of tri-dimensional representations and their purpose. Materials for 2-D and 3-Dimensional representations. Techniques for model construction. Cardboard, paper, polystyrene, wood, textiles and leather in model making.

6006 - Basic Design Studio: The nature of 2-dimensional and 3-dimensional space. Elements of composition. Laws of composition and design organization. Criteria for form generation. Aspects of Form. The relation among Form, Material and Technique. Introduction to the systematization of the design process.

6007 - History, Theory and Criticism of Industrial Design 1: The pre-figuration of design: From the utilitarian to the ritual object. Man as homo faber. The pre-industrial era. Handcraft. The Industrial Revolution. The Industrial Product and its characteristics. Critiques to Industrialism. The Eclecticism of the XIX century. The Art Nouveau. The development of the Industrial Civilization.

6008 - Methodology for Industrial Design: Definitions of method and methodology. The generation of new products and the analysis of existent products. Methods for the phase of analysis in design. Methods for the phase of synthesis in design. Methods for the phase of evaluation in design.

6009 - Theory of Form 2: Categories of meaning in products. Sign systems, codes and Semiotics in design. The process of communication in products. Operative and persuasive communication. Stereotypes, Halo effect and Cognitive Dissonance. Entropy, redundancy y negentropy in design products. Sensation y perception. Theories of perception relevant to product design (the Gestalt theory, the theory of Direct Perception, and the computational theory of vision). The conceptual models and the Aesthetic Promise of use value. The symbolic nature of products. Metamorphosis and change in the meaning of products.

6010 - Industrial Design Technology 2: Manufacturing processes for plastics (extrusion, blow moulding, vacuum forming, injection moulding), glass, ceramics, composites, textiles, wood and leather.

6011 - Industrial Design Studio 1: The relation between form and function in the product. Physical, perceptual and semantic aspects of products. The definition of needs. Types of needs. Use and function in the product. Denotative and connotative aspects in the relation between form and function.

6012 – Model Making and Prototyping Workshop 2: Characteristics, properties and use of different materials for model making. Tools and techniques to transform, unite and cover materials as part of models. Formal model vs. prototype. Models with ceramic materials. Models with synthetic resins and reinforced plastic.

6020 - Ergonomics 1: Ergonomics and its history. Geometric Ergonomics (Anthropometry). Biomechanical considerations in the design of products. Physiological factors in design. Ergonomics and the design of work stations.

6013 - Industrial Design Studio 2: The relation between form and technology in design. Material and technical aspects of form. The relation among form, manufacturing processes and assembly. Form variation based on technological changes.

6014 - Elements of Physics: Introduction to the units of measurement in physics. Vector and vectorial addition. Movement. Laws of Newton. Structural stress diagrams. Energy and power sources. Hydraulics and pneumatics. Rotation mechanics. Vibration, waves, acoustics, light. Optics. Temperature. Electricity and Magnetism.

6015 - Industrial Design Technology 3: Ferrous and non-ferrous metal production. Manufacturing processes for metals (rolling, cutting, bending, forging, pressing, stamping, extrusion, casting, machining). Joining processes (mechanical fastening, soldering, brazing, welding, adhesive bonding). Mechanisms of transmission and transformation of movement (elements of machinery, introduction to mechanisms, graphic analysis of positions and diagram).

6017 - History, Theory and Criticism of Industrial Design 2: The Modern Movement and its trends. The artistic avant garde and the Isms. The contemporary Industrial Design. The Bauhaus. The Styling. The Post-War Design. The technological avant garde. Industrial Design in the centers and the periphery: The Latin American case.

6018 - Graphic Techniques for Communication 2: Standardized drawing. Rendering. Raster Graphics. Vectorial graphics. Photography.

6019 - Computer Aided Design 1: Introduction to Computer Aided Design. Use and handling of CAD programmes. 2D Drawing. Foundations for the digital modelling parts and components. Tools for digital testing and design. The collaborative environment.

6025 - Ergonomics 2: Cognitive aspects in the use of objects (learning, memory and conceptual models). The instructions and the product (visibility and ease of use). Affordances, Feedback and mapping in product design. Types of displays and controls. Criteria for the selection, design and location of displays and controls. Layout of control panels.

6016 - Industrial Design Studio 3: Effect of the physical and cultural environs in the generation of the objects' form. Topology and typology in objects. Product and formal systems. Object-based interpretation of the context in the generation of design proposals. The form of products in aesthetic and cultural terms. The relation between form and ideology.

6021 - Bionic Design: The contribution of Bionics for Industrial Design. The nature of Bionic Design. Introduction to the study of natural systems. Geometric foundations for the understanding of natural structures. Modular systems. Principles of natural growth. Efficiency.

6022 - Industrial Management and Organisation: General aspects about the constitution of enterprises in Venezuela: types and requirements. Theoretical and practical foundations for the Global Management of enterprises. The financial management of enterprises. The industrial organisation.

6023 - Industrial Ecology: Introduction to ecology. Industrial Ecology. Regulations, standards and legislation. The value of a safe environment. Management of industrial wastage.

6024 - Industrial Design Technology 4: Mathematic and physical foundations applied to statics. Mechanics of solids. Material endurance. Kinematics. Notions of technology applied to Industrial Design.

6026 - Professional Practice and Legislation: The legal protection of design. Legislation about copyright and industrial property. Legal regime for models and designs. The design registration. The Labour Laws in Venezuelan.

The in-house and the freelance designer. The contract of design services. Methods for the payment of fees. Laws for the professional practice of design in Venezuela.

6027 - Industrial Design Studio 4 (Graduation Project): It is a 36-week design project formulated and developed by each student with the guidance of an academic tutor. At the end of this academic period students presents their design proposals at prototype level together with a written report including the theoretical (consumer studies, etc.) and practical foundations of the decisions made as part of that product.

6028 - Industrial Design Technology 5 (Graduation Project): Search of the technological and productive capabilities available in Venezuela to carry out the Graduation Project. Review of the technical ways of presenting projects for manufacturing. As part of this subject professional guidance is provided to students during the tackling of technological issues in their Graduation Projects.

6029 – Industrial / Enterprise Internship: Students are placed during 8 weeks in a Venezuelan or an international company to get hands on experience about the professional practice of Industrial Design before finishing their Bachelor degree.

6200 - Seminar of Alternative Technologies in Design: Productive capability and innovation technology. Appropriate technology. Productive capabilities of the Venezuelan industrial sector. Advance technologies applied to industrial design. Non-conventional sources of energy. Nanotechnology. Biotechnology. Design for recycling. Design with wastage.

6201 - Seminar of Technology on Surface Finishes: Mechanical surface finishes. Chemical surface finishes. Electro-chemical surface finishes for metals and for non-metals. Surface finishes for the recovery of pieces. Inorganic surface finishes on plastics and wood.

6207 - Seminar of Packaging Design: Industrial design as an integrated system. Technical and marketing functions of packaging. Computer aided design of packaging. Packaging and international trade. Packaging and environment.

6209 - Seminar of Computer Aided Design 2: Photorealism and communication in design. Advanced techniques of digital modelling. Lighting and surrounding. Basic techniques for digital composition. Foundations for scene animation. Outsource techniques.

6210 - Seminar of Aesthetics and Styling: Origins of the aesthetic behaviour. Aesthetics before Baumgarten. Aesthetics from Illustration till today. Origen and development of the Industrial Aesthetics. Modern Movement and aesthetics. Styling. The Postmodern aesthetics. The design of pleasurable products.

6212 – Seminar of Product Conceptualization: The nature of design problems. From design concept to product. The ASCHASKED method. Dimensions of product conceptualization: competitiveness, utility, pertinence, originality, representativeness, and expressiveness.

6214 – Seminar of Product Design: The design project and its phases. Enterprise dynamics and product design. Concept design: characteristics and phases. Product concept and design concept: techniques, methods and programmes for their development. Differences and similarities between product concept and design concept. Selection of design alternatives.

6215 - Seminar of Musical Instruments Design: Anatomic considerations. History and types of musical instruments. Musical genre and the nature of musical instruments. Technologies, machines and tools for the construction of musical instruments. Materials and structural considerations. Finishes and decoration of musical instruments. Ergonomic and design considerations. Reverse engineering. CAD: digital modelling and validation. Project presentation.

6216 - Seminar of Market Research: Introduction to market research: types of design. Market segmentation: general notions and basic methods. The process in market research: the problem, defining objectives, measurements and sampling. Sources of information: methods and techniques to get primary data (questionnaires, interviews, etc.). Data processing and discussion. Presentation of research findings.