

テックミレニオ大学 (Universidad Tecmilenio)	
所在地	メキシコ ヌエボ・レオン州 モンテレイ市他
Website	<a href="https://www.tecmilenio.mx/en">https://www.tecmilenio.mx/en</a>
学生数	約60,000名
留学生数	約350名
日本国内協定校	なし
学部・学科・大学院	大学概要/歴史
(大学・大学院) Nutrition (栄養学) Gastronomy (美食学) Psychology (心理学) Law (法学) Hotel and Tourism Management (観光マネジメント) Graphic design and Animation(グラフィックデザイン・アニメーション) Industrial Engineering (経営工学) Mechatronics Engineering (メカトロニクス) Computing Systems Administration(コンピューターシステム) Software Development (ソフトウェア開発) ☆Business Administration (経営学) Administration and Finances (財政学) ☆International Trade(国際貿易) ☆Marketing (マーケティング) ☆Business Creation and Development(ビジネス事業開発)	メキシコのヌエボ・レオン州モンテレイにメインキャンパスを置くテックミレニオ大学は、2002年に設立された私立大学です。  経営工学、法学、教育学等の分野で学士課程、修士課程を擁しており、現在約60,000名の学生が在籍しています。  国際交流の面においては、世界34か国、76の大学と交流協定を締結しており、ヨーロッパや北米、中南米からの留学生を中心に約350名の留学生が在籍しています。日本の大学との協定はありません。
留学例	
<pre>           graph LR             A[各学部・各研究科に所属] --&gt; B[プログラム種別④ 一年間・半年間 専門科目にチャレン]             B --&gt; C[学部・研究科の専門科目を履修]           </pre>	

## English-taught courses

Course Title	Program
<a href="#">Information Security</a>	Administrative Computer Systems
<a href="#">Information Technologies Governance</a>	Administrative Computer Systems
<a href="#">Project Evaluation and Funding Resources</a>	Administrative Computer Systems
<a href="#">Doing Business in Europe and Asia</a>	Business Administration
<a href="#">International Enviroments and Business Operations</a>	Business Administration
<a href="#">Doing Business in the Americas</a>	Business Administration
<a href="#">Project Evaluation and Funding Resources</a>	Business Administration
<a href="#">Investments, Debts and Risk Analysis</a>	Financial Administration
<a href="#">International Finances</a>	Financial Administration
<a href="#">Doing Business in Europe and Asia</a>	Financial Administration
<a href="#">International Enviroments and Business Operations</a>	Financial Administration
<a href="#">Doing Business in the Americas</a>	Financial Administration
<a href="#">Project Evaluation and Funding Resources</a>	Financial Administration
<a href="#">Enology and Viticulture</a>	Gastronomy
<a href="#">Chemistry and Physics of Food</a>	Gastronomy
<a href="#">Purchasing Management and Foundations</a>	Gastronomy
<a href="#">Design Management</a>	Graphic Design
<a href="#">Sales of Tourist and Hotel Services</a>	Hotel and Tourism Management
<a href="#">Operations Management</a>	Industrial Engineering
<a href="#">Project Evaluation and Funding Resources</a>	Industrial Engineering
<a href="#">International Contracts</a>	International Business
<a href="#">International Logistics</a>	International Business
<a href="#">International Marketing Strategies</a>	International Business
<a href="#">Doing Business in Europe and Asia</a>	International Business
<a href="#">International Enviroments and Business Operations</a>	International Business
<a href="#">Doing Business in the Americas</a>	International Business
<a href="#">Project Evaluation and Funding Resources</a>	International Business
<a href="#">Purchasing Management and Foundations</a>	International Business
<a href="#">Distribution Channels</a>	Marketing
<a href="#">Doing Business in Europe and Asia</a>	Marketing
<a href="#">International Enviroments and Business Operations</a>	Marketing
<a href="#">Doing Business in the Americas</a>	Marketing
<a href="#">Project Evaluation and Funding Resources</a>	Marketing
<a href="#">Industrial Networks</a>	Mechatronics
<a href="#">Immunology and Nutrition</a>	Nutrition
<a href="#">Software Verification and Validation</a>	Software Development
<a href="#">Design of Web Applications</a>	Software Development
<a href="#">Effective Lectures Seminar</a>	All

**Important:** The availability of the courses has to be confirmed by the host campus, send the list of courses of your interest in advance so we can send the request to the campus.

Course Title	Program
Information Security	Administrative Computer Systems

### General Objectives and Structure

Identify the different types of threats and risks to propose the design of a strategic plan for information security in the organizations.

- Topic 1. [Introduction to information security](#)
  - 1.1 Information security
  - 1.2 Properties of a secure information system
  - 1.3 Components of security
- Topic 2. [Information Risks](#)
  - 2.1 Risk analysis
  - 2.2 Risk Control
  - 2.3 Tools for analyzing and managing risks
- Topic 3. [Security controls](#)
  - 3.1 The organization and its responsibility for security
  - 3.2 Security politics
  - 3.3 Regulatory framework
- Topic 4. [Security Management Systems](#)
  - 4.1 Security-related organizations
  - 4.2 System standards for security management
  - 4.3 Other aspects related to information security technology
- Topic 5. [Security controls](#)
  - 5.1 Procedural controls
  - 5.2 Technical and logical controls
  - 5.3 Physical controls
- Topic 6. [Information security strategies](#)
  - 6.1 Evaluating vulnerability
  - 6.2 Security Models
  - 6.3 Identification, authentication and authorization
- Topic 7. [Access control Process](#)
  - 7.1 People access
  - 7.2 Physical Access control
  - 7.3 Biometric systems
- Topic 8. [Software threats](#)
  - 8.1 Software vulnerability
  - 8.2 Software and information threats
  - 8.3 Risk environments
- Topic 9. [Hacking](#)
  - 9.1 Classification of computer intruders
  - 9.2 Hacking process
  - 9.3 Hacking tools
- Topic 10. [Software security](#)

- 10.1 Security resources for the operative system
- 10.2 Antimalware
- 10.3 E-mail
- Topic 11. Secure networks
  - 11.1 Private virtual networks
  - 11.2 SSL / TTL and Firewall
  - 11.3 Other secure practices on the web
- Topic 12. Security incident management
  - 12.1 Information security incidents
  - 12.2 Incident response and forensic investigation
  - 12.3 Knowledge databases
- Topic 13. Business continuity plans
  - 13.1 Back-up plan
  - 13.2 Emergency plan
  - 13.3 Recovery plan
- Topic 14. Monitoring and Security Tests
  - 14.1 Security monitoring mechanisms
  - 14.2 Monitoring tools
  - 14.3 Validating the security effectiveness
- Topic 15. Security Culture
  - 15.1 Secondary storage
  - 15.2 Removable and Remote Storage
  - 15.3 Security copies and back-up images

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To establish regulations on the usage and administration of the Information Technologies in the organization to guarantee the quality of operations.

- Topic 1. **Fundamentals of IT Governance**
  - 1.1 IT governance
  - 1.2 Principles of IT governance
  - 1.3 Functions and responsibilities of IT governance
- Topic 2. **Models of IT Governance for Decision-Making**
  - 2.1 Monarchic model of an IT business
  - 2.2 Federate and feudal model
  - 2.3 Anarchist and duopoly model
- Topic 3. **Conditions and Needs for a Good IT Governance**
  - 3.1 Best practices for IT governance
  - 3.2 Security information governance
  - 3.3 Architecture of the company
- Topic 4. **Strategies of IT Governance**
  - 4.1 Process of implantation of IT governance
  - 4.2 Creation of strategies for a good IT governance management
  - 4.3 Success factors on the IT governance implementation
- Topic 5. **Evaluation of the Effectiveness when Implementing the IT Governance**
  - 5.1 Measure of performance
  - 5.2 Effectiveness evaluation
  - 5.3 Promoters to implement the IT governance
- Topic 6. **Planning and Organizing**
  - 6.1 Principles of COBIT 5
  - 6.2 Process and management of governance
  - 6.3 Organization structures
- Topic 7. **Acquisition and Implementation**
  - 7.1 Acquisition
  - 7.2 Company context
  - 7.3 Lifecycle
- Topic 8. **Delivery and Support**
  - 8.1 Manage levels
  - 8.2 Guarantee the systems' security
  - 8.3 Educate and train the final users

- Topic 9. **Evaluate and Monitor**
- 9.1 Monitor the performance and internal control
  - 9.2 Evaluation process
- Topic 10. **Benefits of COBIT and IT Relation with Other Standards**
- 10.1 Benefits of the goals cascade COBIT 5
  - 10.2 Comparison among standards
- Topic 11. **Informatics Legal Aspects**
- 11.1 Types of contracts
  - 11.2 Clauses and parts
  - 11.3 Stages of the contract
- Topic 12. **Licenses of Usage**
- 12.1 Types of software according to the license
  - 12.2 Characteristics of the license of usage
  - 12.3 Legal use of software (disadvantages, prevention, and piracy)
- Topic 13. **Contracts of Support and Maintenance**
- 13.1 Types of contracts
  - 13.2 Clauses and parts
- Topic 14. Confidentiality of Information**
- 14.1 Information security
  - 14.2 Legal aspects of confidentiality
- Topic 15. IT Laws and Regulations**
- 15.1 Software rights
  - 15.2 Personal information protection
  - 15.3 Other aspects of laws and regulations for IT

Course Title	Program
Project Evaluation and Funding Resources	Administrative Computer Systems
	Business Administration
	Financial Administration

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To apply the main assessment techniques in order to accept the best investment project and the ideal funding option for the company.

Topic 1. [Introduction to project evaluation](#)

- 1.1 Conceptual framework of the project
- 1.2 Financial principles and decisions
- 1.3 Importance of the investment projects of a company

Topic 2. [Main types of projects](#)

- 2.1 According to their nature
- 2.2 According to their economic activity
- 2.3 According to their focus and interdependence

Topic 3. [Phases or lifecycles of projects](#)

- 3.1 Prior to the investment
- 3.2 During the investment
- 3.3 Operation phase

Topic 4. [The cost of investing in a project](#)

- 4.1 Capital budget
- 4.2 Weighted average cost of capital

Topic 5. [Cash flow estimation](#)

- 5.1 Relevant cash flows and their projection
- 5.2 Initial, operating, and terminal cash flows, incremental flows, and marginal analysis
- 5.3 Opportunity and sunk costs, working capital, devaluation, taxes, inflation and exchange rates

Topic 6. [Project evaluation under uncertainty](#)

- 6.1 Scenario analysis
- 6.2 Sensitivity analysis
- 6.3 Decision analysis

Topic 7. [Risk aspects to consider when carrying out projects](#)

- 7.1 Expected profitability
- 7.2 Expected profitability against the opportunity cost of the investments
- Topic 8. Premises for project optimization
  - 8.1 Optimal time
  - 8.2 Optimal size
- Topic 9. Other project evaluation
  - 9.1 Balance point
  - 9.2 Financial analysis through financial ratios
- Topic 10. Funding sources
  - 10.1 Financing sources by company size and type
  - 10.2 Financing sources available in the national and international financial systems by market type
  - 10.3 Financing cost and determiners in the selection of a financing source
- Topic 11. Payback period
  - 11.1 Relevant definitions
  - 11.2 Practical explanation
  - 11.3 Decisions arising from the result
- Topic 12. Net present value
  - 12.1 Net present value definition
  - 12.2 Practical explanation
  - 12.3 Decisions based on the result
- Topic 13. Profitability index
  - 13.1 Relevant definitions
  - 13.2 Practical explanation
  - 13.3 Decisions arising from the result
- Topic 14. Internal rate of return
  - 14.1 Relevant definitions
  - 14.2 Practical explanation
  - 14.3 Decisions arising from the result
- Topic 15. Projects with different lifecycles
  - 15.1 Projects with different lifecycles
  - 15.2 Practical explanation
  - 15.3 Decisions arising from the result



Course Title	Program
Doing Business in Europe and Asia	Business Administration
	Financial Administration
	International Business
	Marketing

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To identify and analyze opportunities in European, and Asian markets, to establish strategies for the international expansion of companies in the region.

#### Topic 1 General frameworks in Europe and Asia

- 1.1 Free trade agreements in both regions
- 1.2 Business environments
- 1.3 Industrial clusters and technology
- 1.4 Political and security challenges by region
- 1.5 Social and economic factors

#### Topic 2. Doing business in Europe

- 2.1 Primary sector
- 2.2 Manufacturing
- 2.3 Services
- 2.4 Economic poles in Europe
- 2.5 European cultural diversity

#### Topic 3. Doing business in Asia

- 3.1 Primary sector
- 3.2 Manufacturing
- 3.3 Services
- 3.4 Economic poles in Asia
- 3.5 Cultural diversity across the continent

Course Title	Program
International Environments and Business Operations	Business Administration
	Financial Administration
	International Business
	Marketing

### General Objectives and Structure

At the end of the course, the student will develop the following competency:

Identify and analyze the theoretical and practical elements that are key for companies in an international business environment.

- Topic 1. [Globalizing businesses and marketplaces](#)
- Topic 2. [Country differences matter](#)
  - 2.1. Political systems
  - 2.2. Economic systems
  - 2.3. Legal systems
  - 2.4. Cultural frameworks
- Topic 3. [Ethics and social responsibility in international business](#)
- Topic 4. [International trade theory](#)
- Topic 5. [International trade policy](#)
- Topic 6. [Strategy and foreign direct investments](#)
- Topic 7. [World financial environments](#)
  - 7.1. Currency and the foreign exchange markets
  - 7.2. The international monetary system
  - 7.3. The global capital market
- Topic 8. [Global strategy and implementation](#)
- Topic 9. [Organization of the multinational firm: design and control](#)
- Topic 10. [International expansion and foreign markets](#)
- Topic 11. [Export and import practices](#)
- Topic 12. [Global sourcing, production and logistics](#)

Course Title	Program
Doing Business in the Americas	Business Administration
	Financial Administration
	International Business
	Marketing

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To identify and analyze opportunities in Latin American markets, to establish strategies for the international expansion of companies in the region.

Topic 1. [General framework in the Americas](#)

- 1.1 Free trade agreements in the region
- 1.2 Business environment
- 1.3 Industrial clusters and technology
- 1.4 Political and security challenges in the region
- 1.5 Social and economic factors in the region

Topic 2. [Doing business in the U.S. and Canada](#)

- 2.1 Primary sector
- 2.2 Manufacturing
- 2.3 Services
- 2.4 Economic poles in the U.S. and Canada
- 2.5 Cultural diversity in the U.S. and Canada

Topic 3. [Doing business in Central and South America](#)

- 3.1 Primary sector
- 3.2 Manufacturing
- 3.3 Services
- 3.4 Economic poles
- 3.5 Cultural diversity

Course Title	Program
Investments, Debts and Risk Analysis	Financial Administration

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To propose optimum investment portfolios according to the investors' needs, as to identify designed portfolios' risks and understand money and stock markets.

Topic 1. [Capital Market Operation](#)

- 1.1 Introduction to the Stock Market
- 1.2 Stock Market Regulations
- 1.3 International Stock Exchanges

- Topic 2. [The Mexican Stock Exchange](#)
  - 2.1 Functions
  - 2.2 Participation in the Market
  - 2.3 Market Instruments
- Topic 3. [Stock Market Indexes](#)
  - 3.1 Stock Indexes
  - 3.2 Stock Indexes Development
  - 3.3 Main International Stock Indexes
- Topic 4. [Historical Yields](#)
  - 4.1 Calculation of the Yield
  - 4.2 Historical Record
  - 4.3 Historical Yield Lessons
- Topic 5. [Capital Market Efficiency](#)
  - 5.1 The Efficient Markets Hypothesis
  - 5.2 Wrong Ideas on the Efficient Market Hypothesis
  - 5.3 Forms of Efficiency
- Topic 6. [Investment Portfolio Management Process](#)
  - 6.1 Standard Deviation and Variance of an Asset
  - 6.2 Standard Deviation and Variance of a Portfolio
- Topic 7. [Capital Market Line: CML](#)
  - 7.1 Markowitz's Theory
  - 7.2 Sharpe's Theory
  - 7.3 Beta Coefficient in Capital Asset
- Topic 8. [Asset Valuation Models](#)
  - 8.1 CAPM Model
  - 8.2 Arbitrage Pricing Theory (APT)
- Topic 9. [Fundamental Analysis](#)
  - 9.1 Information Sources
  - 9.2 Analysis Techniques
  - 9.3 Valuation Multiples and Discounted Cash Flow (DCF)
- Topic 10. [Technical Analysis](#)
  - 10.1 Characteristics
  - 10.2 Chartist Analysis
  - 10.3 Oscillators Analysis
- Topic 11. [Bond Portfolio Management](#)

- 11.1 Introduction to the Fixed Income Market
- 11.2 Bonds and Debentures
- 11.3 Treasury Products and Corporate Bonds
- Topic 12. [Bonds Features and Calculation](#)
  - 12.1 Price
  - 12.2 Yield
  - 12.3 Duration and Modified Duration
- Topic 13. [Introduction to Bond Management Risk](#)
  - 13.1 Types of Risks
  - 13.2 Risks Analysis and Management
- Topic 14. [Portfolio Hedging through Derivatives](#)
  - 14.1 The Theory of Hedging
  - 14.2 Equity Theory with Future and Options
  - 14.3 Fixed Income Hedgings
- Topic 15. [Value-at-Risk \(VaR\)](#)
  - 15.1 VaR Calculation

Course Title	Program
International Finances	Financial Administration

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To identify, research, and classify the main advantages and disadvantages of multinational corporations due to exchange rate variations.

### Competence 1. Viticulture

- Topic 1. Viticulture
- 1.1 Introduction to Viticulture
  - 1.2 History and prohibition of wine in Mexico
  - 1.3 Geography, soil and climate
- Topic 2. Vineyard properties
- 2.1 Cultivation techniques
  - 2.2 Vineyard care
  - 2.3 Wine-making culture
- Topic 3. Wine elaboration
- 3.1 Types of wines
  - 3.2 Wine elaboration
  - 3.3 Wine properties and artisanal production
- Topic 4. Wines of the old world
- 4.1 Wines of the old world
  - 4.2 Wine regions
  - 4.3 Old world strains
- Topic 5. Wines of the new world
- 5.1 Regions in Mexico, North America, Central America and South America
  - 5.2 The taste of wine
  - 5.3 The tongue: perception of flavor and gustatory memory
  - 5.4

## **Competence 2. Enology**

- Topic 6. Utensils
- 6.1 Glassware management
  - 6.2 Service quality
  - 6.3 Utensils for wines
- Topic 7. The study of wine
- 7.1 Enology
  - 7.2 Wine composition
  - 7.3 Tannins
- Topic 8. Technical Aspects
- 8.1 Nutritional properties of wine
  - 8.2 Common problems with wine
  - 8.3 Bottling and sealing
- Topic 9. Enological Technology

- 9.1 Enological technology
- 9.2 Sensory analysis, aspect and color of the wine
- 9.3 Nose and mouth of the wine

Topic 10. [Wine culture](#)

- 10.1 Development of tastings
- 10.2 Wine color
- 10.3 Wine varieties

**Competence 3. Winemaker training**

Topic 11. [The enologist](#)

- 11.1 Winemaking culture of the enologist
- 11.2 Characteristics of the enologist
- 11.3 Work opportunities

Topic 12. [Training and work orientation](#)

- 12.1 Training and work orientation
- 12.2 Wine management
- 12.3 Costs

Topic 13. [Vine Genetics](#)

- 13.1 Vine genetics and improvement
- 13.2 Technology in the industry

Topic 14. [Wine storage room](#)

- 14.1 Cellars
- 14.2 Administration of the cellar

Topic 15. [Service](#)

- 15.1 Quality of service
- 15.2 Pairings of appetizers, entrees, and desserts

Course Title	Program
Chemistry and Physics of Food	Gastronomy

**General Objectives and Structure**

To select the most adequate physical and chemical methods for the conservation and elaboration of food dishes.

Topic 1. [General information of food preservation](#)

- 1.1 Definition of concepts
- 1.2 Historical Development
- 1.3 Needs of food preservation considering the alterations and conditions of the processes for their conservation
  
- Topic 2. Methods of food preservation by physical means
  - 2.1 Definition and types of physical means
  - 2.2 Choice of thermal treatments: heat, scalding, pasteurization and Sterilization
  - 2.3 Low-temperature thermal treatments: cold, cooling and freezing
  
- Topic 3. Preservation of Food by Water Content
  - 3.1 Concentration
  - 3.2 Draining
  - 3.3 Dehydration and freeze drying
  
- Topic 4. Preservation of food by chemical means
  - 4.1 Chemical treatment without modification of the organoleptic characteristics of food
  - 4.2 Chemical treatment with modification of the organoleptic characteristics of food
  - 4.3 Chemical treatment assisted by microorganisms
  
- Topic 5. Radiation treatments
  - 5.1 UV radiation
  - 5.2 Ionizing radiation
  - 5.3 Ohmic treatment
  
- Topic 6. Preservation of nutrients in food preparation
  - 6.1 Additives
  - 6.2 Food coloring
  - 6.3 Antioxidants
  
- Topic 7. Additives that improve the sensorial characteristics of food I
  - 7.1 Emulsifying salts
  - 7.2 Glazing agents
  - 7.3 Flavor Enhancers
  
- Topic 8. Additives that improve the sensory characteristics of food II
  - 8.1 Stabilizer agents
  - 8.2 Humectant agents
  - 8.3 PH regulators
  
- Topic 9. Sensory Evaluation of Food



- 9.1 General concepts of sensory evaluation
- 9.2 Sensory evaluation: perception, color, smell and taste
- 9.3 Objective evaluation
- Topic 10. Qualification of Sensory Tests
  - 10.1 Analytical tests
  - 10.2 Affective tests
  - 10.3 Sensory Classroom
- Topic 11. Avant-garde cuisine
  - 11.1 Origin of avant-garde cuisine
  - 11.2 Contemporary Trends
  - 11.3 Main exponents
- Topic 12. Molecular Gastronomy
  - 12.1 Origin of Molecular Gastronomy
  - 12.2 Deconstruction and new textures
  - 12.3 Techniques, equipment, and tools
- Topic 13. Fusion Cuisine
  - 13.1 Origin of Fusion Cuisine
  - 13.2 Characteristics of Fusion Cuisine
  - 13.3 Exponents and fusion cuisine recipes
- Topic 14. Signature Cuisine
  - 14.1 Origin of Author's Cuisine
  - 14.2 Characteristics of Author's Cuisine
  - 14.3 Exponents of Author's Cuisine
- Topic 15. Trends in the contemporary cuisine
  - 15.1 Spanish Cuisine
  - 15.2 French Cuisine
  - 15.3 Mexican Cuisine

Course Title	Program
Purchasing Management and Foundations	Gastronomy
	International Business

### General Objectives and Structure

At the end of the course, the student will develop the following competency:

Design supply strategies that maximize the value of purchases for the company and reduce the risks.

- Topic 1. [Importance of purchases](#)
  - 1.1 Background and economic importance of shopping
  - 1.2 The need to buy
- Topic 2. [Policies and procedures](#)
  - 2.1 Overview of the procurement process
  - 2.2 Professionalization and functions of the purchasing department
- Topic 3. [Organization, objectives and responsibilities](#)
  - 3.1 Concept and objectives of purchases
  - 3.2 Organizational systems and purchasing
  - 3.3 Structure of the purchasing area
- Topic 4. [Types of purchases](#)
  - 4.1 Domestic and foreign purchases
  - 4.2 Main problems
- Topic 5. [Legal and ethical aspects](#)
  - 5.1 Ethics in purchasing
  - 5.2 Legal Standards
  - 5.3 The new image of the procurement staff
- Topic 6. [Efficient Consumer Response](#)
  - 6.1 Definition and identification of requirements
  - 6.2 Evolutionary phases of the supply chain
- Topic 7. [Analysis of supply sources](#)
  - 7.1 Importance of suppliers and their integration into the supply chain
  - 7.2 Developmental stages of the supply chain
- Topic 8. [Evaluation Methods](#)
  - 8.1 Requirements to be met by a supplier
  - 8.2 Analysis of alternatives and evaluating suppliers
- Topic 9. [Selection criteria](#)
  - 9.1 Basic information about suppliers and means of recruitment
  - 9.2 Towards a new culture in the relationship with suppliers
- Topic 10. [Negotiation and contracts](#)

- 10.1 Trading Conditions
- 10.2 The new variables of trading
- 10.3 A new vision in negotiations between supplier-buyer
- Topic 11. [Strategic Alignment](#)
  - 11.1 Evolution and selection of the purchasing strategy
  - 11.2 Strategic purchasing management
- Topic 12. [Strategic purchase Matrix](#)
  - 12.1 Construction of the strategic purchase matrix
  - 12.2 Kraljic Matrix
  - 12.3 Defining short and long term strategies
- Topic 13. [Types of strategies](#)
  - 13.1 Purchase strategies integrated to the supply chain and profit generating
  - 13.2 Optimization of conditions
- Topic 14. [Cost Management - costing](#)
  - 14.1 Types of costs
  - 14.2 Cost management and costing
- Topic 15. [Information technology and suppliers management systems](#)
  - 15.1 Electronic Data Interchange
  - 15.2 Technology in purchase: e-procurement
  - 15.3 Supplier relationship management (SRM)

Course Title	Program
Design Management	Graphic Design

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To propose the most adequate design methodology to solve a specific design problem and being capable to use the most adequate administrative tools for its management.

- Topic 1. [Location of a need and target audience](#)
  - 1.1 Design Thinking
  - 1.2 Usability
  - 1.3 Market segmentation and audiences
- Topic 2. [Definition of objectives, measurement, and attributes of design](#)

- 2.1 Problem Definition
- 2.2 Elements of solution evaluation
- 2.3 Evaluation systems
- Topic 3. Message, mandatory elements, formats, and schedule
  - 3.1 Problem, idea and message
  - 3.2 Formal and secondary elements of design
  - 3.3 Schedule of activities and deliverables
- Topic 4. Initial budget and approvals
  - 4.1 Investigation, design and administration times management
  - 4.2 Production times
  - 4.3 Authorization and responsible people
- Topic 5. Context and vision of design
  - 5.1 Design and business culture
  - 5.2 Finances, technology and laws
  - 5.3 Products and services
- Topic 6. Development of basic ideas
  - 6.1 Design methods
  - 6.2 Creativity methods
  - 6.3 *Action-Research*
- Topic 7. Design of prototypes, dummies, sketches and originals
  - 7.1 Sketching processes
  - 7.2 Making of electronic and physical dummies
  - 7.3 Preparation of physical originals pre-printing
- Topic 8. Tests, evaluation, and modifications
  - 8.1 Prototype tests
  - 8.2 Analog and digital control systems
  - 8.3 Quality control
- Topic 9. Production
  - 9.1 Quality management
- Topic 10. Marketing, brand communication, design and innovation
  - 10.1 Users, customers and markets
  - 10.2 Marketing communication
  - 10.3 Brand communication
- Topic 11. Concept, characteristics and usefulness of the design portfolio

- 11.1 Design portfolio, definition and types
- 11.2 Public portfolio systems
- 11.3 Portfolio management
- Topic 12. Analysis of the professional services of a designer
  - 12.1 Kinds of professional activities
  - 12.2 Regional futurology
- Topic 13. Costs estimation and legal topics
  - 13.1 Budget by costs
  - 13.2 Budget by project
  - 13.3 Legal aspects of professional operation
- Topic 14. Design management vision
  - 14.1 Economy, businesses and entrepreneurship
  - 14.2 Design management practice
  - 14.3 Business planning
- Topic 15. Accountability and finances
  - 15.1 Financial organization
  - 15.2 Financial management
  - 15.3 Design value measurement

Course Title	Program
Sales of Tourist and Hotel Services	Hotel and Tourism Management

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To identify the pertinence between the sales processes, customer relationships and revenue maximization.

- Topic 1. Introduction to sales
  - 1.1 Definition
  - 1.2 The sales department
- Topic 2. Overview of sales in tourism I
  - 2.1 Selling the intangible
  - 2.2 Marketing services or tourism products
  - 2.3 The tourism product available for sale

- Topic 3. [Overview of sales in tourism II](#)
  - 3.1 Sales as a successful tool in a company
  - 3.2 Effective communication
- Topic 4. [Sales in the tourism sector I](#)
  - 4.1 Sales in Airlines
  - 4.2 Sales in Motor Transport
  - 4.3 Sales in Cruises
- Topic 5. [Sales in the tourism sector II](#)
  - 5.1 Sales in travel agencies
  - 5.2 Sales in Hospitality
  - 5.3 Other sales in the tourism sector
- Topic 6. [The sales executive I](#)
  - 6.1 Characteristics, skills, attitudes and values
  - 6.2 Functions within the company
  - 6.3 Ethical aspects of sales
- Topic 7. [The sales executive II](#)
  - 7.1 The image of the executive
  - 7.2 Types of executives
  - 7.3 Internal and external relations
- Topic 8. [The sales process I](#)
  - 8.1 Prospection and opening
  - 8.2 Identifying needs
  - 8.3 Selling benefits
- Topic 9. [The sales process II](#)
  - 9.1 Overcoming objections
  - 9.2 Closing the sale
  - 9.3 Financial review
- Topic 10. [Important aspects of sales](#)
  - 10.1 Types of sales
  - 10.2 Types of sales
  - 10.3 Account management
- Topic 11. [The market](#)
  - 11.1 Definition
  - 11.2 Analyzing the buyer's profile
  - 11.3 Needs and benefits

- Topic 12. [The product or service](#)
- 12.1 Definition
  - 12.2 Information the seller must know
  - 12.3 Support material for the sale
- Topic 13. [The competition](#)
- 13.1 Definition
  - 13.2 Performance analysis
  - 13.3 Competitor's ethic
- Topic 14. [Post-sale follow-up](#)
- 14.1 The follow-up, final stage of the sales process
  - 14.2 Follow-up equal to new sales opportunity
  - 14.3 Follow-up plan for clients
- Topic 15. [Electronic sales, the future today](#)
- 15.1 E-commerce, a new challenge for sales executives
  - 15.2 Smartphones
  - 15.3 Social Media

Course Title	Program
Operations Management	Industrial Engineering

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
Design a resource planning for a specific demand, applying inventory control systems to a supply chain.

- Topic 1. [Importance and costs related to the inventory control](#)
- 1.1 History of inventory
  - 1.2 Strategic planning and inventory decisions
  - 1.3 Involved costs and inventory costing
- Topic 2. [Size of the economic quantity](#)
- 2.1 Definitions, equations and examples of the EOQ
  - 2.2 Definitions, equations and examples of the EPQ
- Topic 3. [Inventory models](#)

- 3.1 Definitions and equations of models with volume discount in all units
- 3.2 Definitions and equations of incremental models
- 3.3 Definitions and equations of models for restricted multiproduct
  
- Topic 4. [MRP](#)
  - 4.1 Objective, characteristics and basic concepts of the MRP
  - 4.2 Lot for lot rule determining the lot size
  - 4.3 Size of the dynamic quantity, planning and heuristic rules Silver-Meal and (Wagner-Whitin)
  
- Topic 5. [Basic concepts of the CRP, MRP and MPS](#)
  - 5.1 Concepts, examples and practical exercises of the CRP
  - 5.2 Concept of the MRP and MPS
  - 5.3 Connection between CRP-MRP-MPS
  
- Topic 6. [JIT](#)
  - 6.1 Definition, objectives, concepts, and strategies. Pros and cons
  - 6.2 Characteristics of the *Kanban* system
  - 6.3 Planning and implementation of the JIT system
  
- Topic 7. [OPT](#)
  - 7.1 Definitions, objectives, concepts, and strategies
  - 7.2 Pros and cons
  - 7.3 Theory of Constraints
  
- Topic 8. [Production control system](#)
  - 8.1 Production control system and organizational activity
  - 8.2 Analysis, planning, and structure of the information system for production control
  - 8.3 Production control in real time, integrated information system
  
- Topic 9. [Project Management](#)
  - 9.1 Definition of network diagrams, PERT y CPM
  - 9.2 Implementation of the CPM
  
- Topic 10. [Aggregate planning elements: graphics and charts](#)
  - 10.1 Accurate production and workforce variation
  - 10.2 Consistent labor force, variable inventory and sell out
  - 10.3 Other variations: subcontracting and overtime
  
- Topic 11. [Aggregate planning optimization and disaggregation to a MPS](#)



- 11.1 Linear programming definition, assumptions and implementation
- 11.2 Definition of the disaggregation concept
- 11.3 Disaggregation implementation through algorithms
  
- Topic 12. [Networks with probabilistic timing and project shortening](#)
  - 12.1 Implementation of PERT for a project planning
  - 12.2 Definition and projects shortening through CPM
  
- Topic 13. [Definition of heuristic methods and limitations of jobs sequencing](#)
  - 13.1 Definition of jobs sequencing concept
  - 13.2 Heuristic methods (n works / 1 machine)
  - 13.3 Definitions and application of Johnson and Jackson algorithm (n works / 2 machines)
  
- Topic 14. [Stochastic models for jobs sequencing](#)
  - 14.1 Model under risks, one period
  - 14.2 Model with uncertainty, multi-period
  
- Topic 15. [Line balancing](#)
  - 15.1 Definition and criteria of line balancing
  - 15.2 Definition and applications of heuristic methods

Course Title	Program
International Contracts	International Business

## General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To apply the best tools from various business transactions, in particular, international contracts and related documentation, as well as the use of international means of payment and alternative methods.

- Topic 1. [Introduction to International Law](#)
  - 1.1 Evolution of Trade Internationalization in the World
  - 1.2 International Trade in Mexico
- Topic 2. [International Law and its Applicability](#)
  - 2.1 Legislative Hierarchy in Mexico's International Trade
  - 2.2 Private International Law
  - 2.3 Legal Framework Governing International Contracts
- Topic 3. [Trade Internationalization: Unification of Criteria](#)
  - 3.1 Major International Trade Organizations
  - 3.2 The WTO and its Commercial Principles
- Topic 4. [International Chamber of Commerce \(ICC\)](#)
  - 4.1 What is the ICC and why is it significant in international trade?
  - 4.2 ICC's Support Organizations
  - 4.3 International Commerce Terms (INCOTERMS)
- Topic 5. [Creating a Common Jurisdiction](#)
  - 5.1 International Treaties and Their Impact on Trade
  - 5.2 Lex Contractus / Lex mercatoria
  - 5.3 Practices and Customs in International Trade
- Topic 6. [Introduction to International Contracts](#)
  - 6.1 Elements of International Contracts
  - 6.2 Non-Tariff Barriers in International Contracts
  - 6.3 Analysis of Legal Representation in International Contracts
- Topic 7. [International Commercial Contracts](#)
  - 7.1 Letter of Intent
  - 7.2 Main International Contracts and Their Elaboration
  - 7.3 International Model Clauses
- Topic 8. [International Payment Methods](#)

- 8.1 Documents of Sale
- 8.2 International Check
- 8.3 Other International Payment Methods
- Topic 9. [Letter of Credit](#)
  - 9.1 Elements of the Letter of Credit
  - 9.2 Uses and Guarantees
  - 9.3 Logistics of the Letter of Credit
- Topic 10. [International Sale of Goods](#)
  - 10.1 Concept and Main Elements
  - 10.2 Vienna Convention on International Sale of Goods CISG
- Topic 11. [Alternative Dispute Resolution \(ADR\) Methods](#)
  - 11.1 Interpretation of International Contracts in Mexico
  - 11.2 Disputes Resolution Through Trade Agreements and WTO
  - 11.3 Analyzing a Case in Light of a ADR
- Topic 12. [International Arbitration](#)
  - 12.1 Introduction to International Commercial Arbitration
  - 12.2 Court of International Commercial Arbitration
  - 12.3 Main Clauses Applicable to International Arbitration in Terms of Trade Contracts
- Topic 13. [International Mediation](#)
  - 13.1 Concept and Elements of International Mediation
  - 13.2 Legal efficiency
  - 13.3 Analyzing a Case in the Light of International Mediation
- Topic 14. [Negotiation](#)
  - 14.1 Negotiated Solutions
  - 14.2 International Negotiation Tools
  - 14.3 Negotiation Model "Cloud"
- Topic 15. [International Sales Agent](#)
  - 15.1 Concept and Essentials
  - 15.2 Duties of the Parties
  - 15.3 Integration of Contract

Course Title	Program
International Logistics	International Business

## General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To design a comprehensive plan of international logistic distribution to export a domestic product.

Topic 1. [Introduction to International Logistics](#)

- 1.1 International logistics
- 1.2 Support activities for logistics
- 1.3 Introduction to international means of transportation for goods

Topic 2. [Supply Chain Management and Customer Service](#)

- 2.1 Logistics platforms
- 2.2 Supply chain management
- 2.3 The importance of customer service

Topic 3. [Inventory control](#)

- 3.1 Distribution centers
- 3.2 Inventory control based on increase
- 3.3 Inventory control based on demand

Topic 4. [Facilitators of Foreign Commerce](#)

- 4.1 Sources of information and support for foreign commerce
- 4.2 International commerce organizations and institutions
- 4.3 Agreements among nations and foreign commerce facilitators

Topic 5. [Technological platforms](#)

- 5.1 Information systems for logistics
- 5.2 e-Logistics
- 5.3 MRP / ERP

Topic 6. [Means of transportation](#)

- 6.1 Types of international transportation
- 6.2 Cargo modalities in foreign commerce

Topic 7. [Packaging of goods](#)

- 7.1 Types of containers
- 7.2 Packaging
- 7.3 Cubic capacity

Topic 8. [Price setting and INCOTERMS](#)

- 8.1 INCOTERMS
- 8.2 Obligations and rights
- 8.3 Price setting methods

- Topic 9. [Profitability analysis](#)
- 9.1 Break-even point and contribution margin
  - 9.2 Analysis for decision-making
- Topic 10. [Reaching competitive advantages](#)
- 10.1 Process strategies
  - 10.2 Market strategies
  - 10.3 Alliances and associations
- Topic 11. [Foreign commerce law in Mexico](#)
- 11.1 Foreign commerce law
  - 11.2 Customs law
  - 11.3 General import and export taxes law
- Topic 12. [Customs process in Mexico](#)
- 12.1 Customs regimes
  - 12.2 Persons and entities related to the customs process
  - 12.3 Customs clearance
- Topic 13. [International commerce documents](#)
- 13.1 Documents for the export of goods
  - 13.2 Documents for the import of goods
  - 13.3 Goods origin
- Topic 14. [Regulations in Mexico](#)
- 14.1 Constitutional basis of foreign commerce in Mexico
  - 14.2 Departments related to foreign commerce
- Topic 15. [International requirements](#)
- 15.1 Handling of export and import cargo
  - 15.2 Special requirements

Course Title	Program
International Marketing Strategies	International Business

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To analyze the international market for developing a set of strategies allowing a successful commercialization of a product or service on a global scale.

- Topic 1. Identification and Location of Target Markets
- Topic 2. Choice of Entry Mode
- Topic 3. Definition of Marketing Strategy
- Topic 4. Competitive Strategic Decisions
- Topic 5. International Marketing Management
- Topic 6. Strategy Types
- Topic 7. Product/Customer Relationship and Value Proposition
- Topic 8. Price/Cost Relationship
- Topic 9. Distribution Channel and Consumer Convenience
- Topic 10. Promotion, Communication and Culture
- Topic 11. Sales Forecast
- Topic 12. Sales and Operations Plan
- Topic 13. Financial Budgets
- Topic 14. Logistics: Transportation, Inventory and Packaging
- Topic 15. Indicators and Evaluation of Financial Outcomes

Course Title	Program
Distribution Channels	Marketing

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To propose the appropriate distribution channel for a product commercialization, as an element for differentiation and competitive advantage.

- Topic 1. Distribution Channels: Evolution, Purpose and Participants

- 1.1 Distribution Channels Evolution
- 1.2 Purpose of Distribution Channels
- 1.3 From Manufacturer to Customer or Final Consumer: Participants in the Distribution Channel
  
- Topic 2. [Traditional Channels](#)
  - 2.1 Direct Channel
  - 2.2 Indirect Channel
  - 2.3 B2C and B2B Channels
  
- Topic 3. [Multiple Distribution](#)
  - 3.1 Distribution Decision: One Channel vs. Multiple Distribution
  - 3.2 Advantages and Disadvantages of Multiple Distribution
  - 3.3 Channel Conflict
  
- Topic 4. [Distribution Channels Selection](#)
  - 4.1 Distribution Channel Elements
  - 4.2 Factors Involved in the Selection
  - 4.3 Channel Design and Management
  
- Topic 5. [Distribution Logistics](#)
  - 5.1 Definition and Purpose
  - 5.2 Warehouses Location and Design
  
- Topic 6. [Means of Transportation](#)
  - 6.1 Land-Based Transportation
  - 6.2 Sea and Air-Based Transportation
  - 6.3 Intermodal Transportation
  
- Topic 7. [Wrapping and Packaging](#)
  - 7.1 Wrapping: Purpose, Types and Tendencies
  - 7.2 Packaging and Cushioning
  
- Topic 8. [Orders Supply](#)
  - 8.1 Orders Processing
  - 8.2 Inefficiencies in the Supply and How to Deal with them
  - 8.3 Customer Service and Orders Processing
  
- Topic 9. [Costs](#)
  - 9.1 Order Costs
  - 9.2 Inventory Costs
  - 9.3 Sale Costs
  
- Topic 10. [Efficiency Indicators](#)

- 10.1 Working Capital
- 10.2 Liquidity and Solvency
- Topic 11. [Transportation: Tertiariation, Tariffs and Utilities](#)
  - 11.1 Calculation of Transportation Tariffs
  - 11.2 Quoting Tariffs in Practice
  - 11.3 Utilities
- Topic 12. [Logistics Management](#)
  - 12.1 Logistics Information Management
  - 12.2 Global Logistics as a Competitive Advantage
- Topic 13. [Measuring Distribution Channels Productivity](#)
  - 13.1 Distribution Channels Productivity
  - 13.2 Benchmarking
- Topic 14. [Distribution in a Globalized World](#)
  - 14.1 Mexico as International Logistics Pole and its Influence over the Distribution Channels
  - 14.2 International Distribution
  - 14.3 Legal Aspects of Distribution
- Topic 15. [Value Creation in the Distribution Channels](#)
  - 15.1 Value Creation
  - 15.2 The Changing Market and Alternative Distribution Channels

Course Title	Program
Industrial Networks	Mechatronics

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To choose the most viable option of industrial networks to apply it on manufacturing processes.

- Topic 1. [Automation Pyramid](#)



- 1.1 CIM Pyramid – Computer Integrated Manufacturing
  - 1.2 Pyramid Levels
  - 1.3 Application Examples
- Topic 2. [Technologies, Standards and Application Levels](#)
- 2.1 IEEE – Institute of Electrical and Electronics Engineers
  - 2.2 ANSI – American National Standards Institute
  - 2.3 TIA/EIA – Telecommunication Industry Association/ Electronic Industries Association
- Topic 3. [Copper Cable](#)
- 3.1 Physical Properties
  - 3.2 Chemical Properties
  - 3.3 Applications
- Topic 4. [Fiber Optic](#)
- 4.1 Properties of Light
  - 4.2 Fiber Optic Characteristics
  - 4.3 Fiber Optic Uses
- Topic 5. [Wireless Technologies](#)
- 5.1 Fields of Application
  - 5.2 Types of Wireless Networks
  - 5.3 Necessary Installations
- Topic 6. [Wireless Networks](#)
- 6.1 WiFi
  - 6.2 Bluetooth
  - 6.3 ZigBee
- Topic 7. [Industrial Networks IWLAN – Industrial Wireless Local Area Network](#)
- 7.1 Standards Applied
  - 7.2 IWLAN Network Components
- Topic 8. [Sensors and Actuators in Distributed Control](#)
- 8.1 DeviceNET and AS-interface
  - 8.2 Sensors
  - 8.3 Actuators
- Topic 9. [Process Networks](#)

- 9.1 Process Management
- 9.2 Factory and Plant Network
- 9.3 Cellular Network
  
- Topic 10. [PROFINET – Industrial Ethernet Standard](#)
  - 10.1 TCP/IP Protocol – Transmission Control Protocol/ Internet Protocol
  - 10.2 Ethernet, Advantages and Disadvantages
  - 10.3 PROFINET and PROFIENERGY Uses
  
- Topic 11. [Fieldbuses](#)
  - 11.1 Field Networks Characteristics
  - 11.2 Field Networks Standards
  - 11.3 Buses Applications
  
- Topic 12. [FieldBus \(Field Network\) and ProfiBus \(Process Field Bus\)](#)
  - 12.1 Origins
  - 12.2 Technology
  - 12.3 Standardization
  
- Topic 13. [ModBus and CAN Communications Protocol– Controller Area Network](#)
  - 13.1 History and Evolution
  - 13.2 Physical and Data Layer
  - 13.3 Advantages and Limitations
  
- Topic 14. [OPC Technology – Object Linking for Process Control](#)
  - 14.1 Origin
  - 14.2 Physical Layer
  - 14.3 Application Layer
  
- Topic 15. [Future and Perspectives of Industrial Networks](#)
  - 15.1 Current Development
  - 15.2 Perspectives
  - 15.3 Expansion Speed of Industrial Networks

Course Title	Program
Immunology and Nutrition	Nutrition

## General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To analyze the relationship between the immune system functioning and eating habits with the objective of establishing specific nutritional recommendations.

### Module 1 Generalities of the Immune System

- Topic 1. [The immune system](#)
- 1.1 Functions of the immune system
  - 1.2 Organs of the immune system
- Topic 2. [Immunity types](#)
- 2.1 Innate immunity
  - 2.2 Adaptive immunity
- Topic 3. [Immune response](#)
- 3.1 What is the immune response?
  - 3.2 Environmental factors that influence the immune response
- Topic 4. [Immune system regulation](#)
- 4.1 Nutritional level evaluation and its relation to the immune system
- Topic 5. [The immune system and its role in nutrition](#)
- 5.1 Immunology and nutrition in health and sickness
  - 5.2 Malnutrition and infection

### Module 2 Effects of Nutrition on the Immune Response

- Topic 6. [Pregnancy and breastfeeding](#)
- 6.1 Pregnancy and the influence of human milk on the infant's health
  - 6.2 Immunological factors of breast milk
  - 6.3 Probiotics of breast milk and its benefits at the immunological level
- Topic 7. [Proteins, lipids, vitamins and minerals](#)
- 7.1 Function of proteins and lipids in the immune system
  - 7.2 Benefits of vitamins and minerals in the immune system
- Topic 8. [Antioxidants and fatty acids](#)

- 8.1 Antioxidants and the immune function
- 8.2 Fatty acids and the immune function

Topic 9. [Probiotics and the immune system](#)

- 9.1 Probiotics: factors that benefit the immune system
- 9.2 Probiotics in the different life stages
- 9.3 Probiotics and the immune response to vaccinations

Topic 10. [Nutraceuticals](#)

- 10.1 Nutraceutical food
- 10.2 Criteria to consider food nutraceutical
- 10.3 Difference between nutraceutical, functional food and supplements

### Module 3 Diseases

Topic 11. [Relation between diet and physical activity with the immune system](#)

- 11.1 Diet and immunity
- 11.2 Physical activity in the immune function

Topic 12. Obesity

- 12.1 [The immune system and the inflammatory response in obesity](#)

Topic 13. Food allergies

- 13.1 Definition, diagnostic and treatment of food allergies
- 13.2 Main allergens in food and labeling
- 13.3 New allergens

Topic 14. [Maternal nutrition and embryonic development](#)

- 14.1
- 14.2 Effects in the immune system caused by malnutrition in the pregnant woman
- 14.3 Events in uterus in the allergic diseases development
- 14.4

Topic 15. [Nutrition and immunity in critically ill patients](#)

- 15.1 Immunonutrition in surgical and critically ill patients
- 15.2 Nutrition, immunity, and cancer

Course Title	Program
Software Verification and Validation	Software Development

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To propose and study methods and standards to validate and verify the software development process.

- Topic 1. [Quality concepts](#)
  - 1.1 Quality foundations
  - 1.2 Quality of product
  - 1.3 Elements of quality
- Topic 2. [Software verification and validation](#)
  - 2.1 Verification and validation
  - 2.2 Testing organization
  - 2.3 Testing strategy
- Topic 3. [Software revision](#)
  - 3.1 Revision process
  - 3.2 Revision metrics
  - 3.3 Types of reviews
- Topic 4. [Verification techniques](#)
  - 4.1 Statistical analysis
  - 4.2 Automatic statistical analysis
  - 4.3 Reliability tests
- Topic 5. [Design of tests](#)
  - 5.1 Testing design foundations
  - 5.2 White box testing
  - 5.3 Black box testing
- Topic 6. [Software testing](#)
  - 6.1 Waterfall model testing
  - 6.2 "V" development testing
  - 6.3 Other models
- Topic 7. [Strategies for software testing \(Part 1\)](#)
  - 7.1 Unit test
  - 7.2 Debugging
  - 7.3 Basic route test

- Topic 8. [Strategies for software testing \(Part 2\)](#)
- 8.1 Integration testing
  - 8.2 Validation testing
  - 8.3 System testing and architecture
- Topic 9. [Product metrics](#)
- 9.1 Metrics for requirements model and design model
  - 9.2 Metrics for source code
  - 9.3 Testing metrics
- Topic 10. [Defect management](#)
- 10.1 Defects
  - 10.2 Defects classification and record
  - 10.3 State of a defect
- Topic 11. [Testing automation](#)
- 11.1 Automation basic principles
  - 11.2 Testing automation process
  - 11.3 Automatic testing execution
- Topic 12. [Performance testing](#)
- 12.1 Introduction to performance testing
  - 12.2 Testing design and preparation
  - 12.3 Closing and execution
- Topic 13. [Web applications testing](#)
- 13.1 Content and interface test
  - 13.2 Navigation test
  - 13.3 Other tests
- Topic 14. [Documentation of tests](#)
- 14.1 Test cases
  - 14.2 Test cases basic design
  - 14.3 Test cases design techniques
- Topic 15. [Quality assurance](#)
- 15.1 Quality assurance elements
  - 15.2 International standards
  - 15.3 Reliability, availability, and safety

Course Title	Program
Design of Web Applications	Software Development

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To build web applications using Struts framework to provide solutions to company problems.

#### Module 1. Development of Servlets Web Components

- Topic 1. [Meeting the servlets and JSPs.](#)
  - 1.1 Hypertext Transfer Protocol
  - 1.2 Servlets
  - 1.3 Java Server Pages
- Topic 2. [Architecture of a web application](#)
  - 2.1 The container
  - 2.2 HTTP Servlet Request
  - 2.3 HTTP Servlet Response
- Topic 3. [Servlets](#)
  - 3.1 A servlet's life cycle
  - 3.2 HTTP Servlet Request
  - 3.3 HTTP Servlet Response
- Topic 4. [Starting a web application](#)
  - 4.1 Servlets, settings and context
  - 4.2 Servlet Context Listener
  - 4.3 Synchronization

- Topic 5. [Sessions](#)
- 5.1 Sessions, cookies and other basic aspects.
  - 5.2 HTTP Session
  - 5.3 Http Session Binding Listener

## Module 2. Development of Web JSPs Components

- Topic 6. [JSP](#)
- 6.1 JSP expressions, variables and declaration
  - 6.2 Life cycle and context
  - 6.3 Scriptless
- Topic 7. [JSTL](#)
- 7.1 Cycles
  - 7.2 Control structures
  - 7.3 Handling errors
- Topic 8. [Custom tags](#)
- 8.1 Labels' driver
  - 8.2 Labels with body
  - 8.3 Using the PageContext API to the labels' drivers
- Topic 9. [Deploying a web application](#)
- 9.1 WAR Files
  - 9.2 Configuring the welcome files
  - 9.3 Configuring the servlets, beginning values and error pages
- Topic 10. [Security](#)
- 10.1 Four important aspects in the servlets safety
  - 10.2 Types of authentication
  - 10.3 Safety in data transmission

## Module 3. Enterprise Design Patterns and Other Development Languages

- Topic 11. [Filters and wrappers](#)
- 11.1 Filters
  - 11.2 Wrappers
- Topic 12. [Integration of a web application with a database](#)
- 12.1 JDBC
  - 12.2 ORM
  - 12.3 Hibernate
- Topic 13. [Struts](#)



- 13.1 Meeting struts
- 13.2 Re factorizing application to the Struts
- Topic 14. [AJAX](#)
  - 14.1 The XMLHttpRequest object
  - 14.2 Toolkit for AJAX
  - 14.3 Meeting Comet
- Topic 15. [Other web languages](#)
  - 15.1 Meeting PHP
  - 15.2 Meeting Ruby

Course Title	Program
Effective Lectures Seminar	All

### General Objectives and Structure

At the end of the course, the student will develop the following competency:  
To learn effective presentation skills and improve the strategies through the use of technology to gain audience attention, persuade, and deliver a message.

#### Module 1. Introduction to Effective Lectures

- Topic 1. [Starting an Effective Presentation](#)
  - 1.1 Introduction to Designing an Effective Presentation
  - 1.2 Planning, Developing of Contents and Activities
- Topic 2. [Presentations](#)
  - 2.1 Types of Presentations: Outlines
- Topic 3. [Communication](#)
  - 3.1 Interpersonal Communication and Basic Presentation Techniques
  - 3.2 Organizing Information
  - 3.3 General Elements of Graphic Design
- Topic 4. [Key Elements of a Presentation](#)
  - 4.1 The Presenter
  - 4.2 Types of Audience
  - 4.3 The Objective of a Presentation
- Topic 5. [Audiovisual Tools](#)
  - 5.1 Using Audiovisual Tools
  - 5.2 Fonts
  - 5.3 Properly Using the Different Types of Graphics, Figures and Tables

## Module 2. Designing an Effective Presentation

### Topic 6. [Designing Posters](#)

- 6.1 Designing Posters and Other Static Elements
- 6.2 How to Search Images, Audio and Video on Internet

### Topic 7. [Using Apps](#)

- 7.1 How to Export the Material to Other Apps

### Topic 8. [Interactive Presentations](#)

- 8.1 Interactive PowerPoint Presentations
- 8.2 Keynote Presentations

### Topic 9. [Tools for Effective Presentations](#)

- 9.1 Utilizing Technological Tools
- 9.2 Prezi

### Topic 10. [Reasons why Presentations Fail](#)

- 10.1 Key Elements of an Effective Presentation
- 10.2 Elements to Avoid

## Module 3. The Key Strategies for Presentations

### Topic 11. [Create Better Presentations](#)

- 11.1 Tips and Tricks
- 11.2 Give Excellent Presentations
- 11.3 Making Oral Presentations

### Topic 12. [Charts, Facts, and Statistics](#)

- 12.1 The Use of Numbers

### Topic 13. [Public Speaking](#)

- 13.1 The Use of Anecdotes And Practical Examples
- 13.2 Speaking Tone

### Topic 14. [Prepare](#)

- 14.1 Use Notes
- 14.2 Arrange Slides According to Topics

### Topic 15. [Overview](#)

- 15.1 Plan & Prepare
- 15.2 Perform
- 15.3 Persuade