ESIGELEC
SCHOOL OF ENGINEERING
SMART AND CONNECTED SYSTEMS
ROUEN | POITIERS

BIENVENUE EN FRANCE

COURSE OUTLINE 2024 - 2025

MASTER OF TECHNOLOGY

SOFTWARE ENGINEERING & DIGITAL TRANSFORMATION

In partnership with

INSA
ROUEN NORMANDIE

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A PROGRAM OBJECTIVE

The **Master in Sciences and Technology - Software Engineering & Digital Transformation** degree, awarded by ESIGELEC and INSA Rouen Normandie*, is accredited by the French Ministry of Higher Education and Research.

The Master's Program seeks to equip the students with the relevant knowledge, professional skills and practical experience for industry or for research, which will involve designing, developing and implementing software engineering & digital transformation in different sectors. Students will also acquire basic managerial skills. The international environment at ESIGELEC allows students to discover new cultures and languages. Students must appear for the TCF / TEF certification exam in French (or TOEIC for French speaking students). The mandatory internship gives the students a hands-on experience in the work environment. Our graduates find job opportunities as developers, project managers, consultants or researchers.

B COURSE STRUCTURE

The Master's Program comprises:

- Semester 1 – Academic (on campus) – 30 credits
- Semester 2** – Academic (on campus) – 30 credits
- Semester 3 – Academic (on campus) – 30 credits
- Semester 4 – Internship (company/laboratory) – 30 credits

The first three academic semesters are offered between September 2024 and January 2026***.

Each academic semester and the internship semester carry a total of 30 ECTS credits. A student must score a minimum of 10/20 in a course, to earn the corresponding ECTS credits i.e. 120 credits to be awarded the Master's degree.

*INSA Rouen Normandie is a public institution of higher education that comes under the French Ministry of Higher Education, Research and Innovation. ESIGELEC & INSA Rouen Normandie are jointly accredited to award the Master's Degree

**Students with a 4-year Bachelor's Degree and a specialisation in Information Technology / Computer Science or related fields, may be offered direct entry into semester two.

***The first two academic semesters are offered between February 2025 and January 2026 for students granted direct entry into the second semester

C THE ACADEMIC SEMESTERS

Lectures, tutorials, lab work, practical work, projects and / or seminars make up the academic semesters. Evaluation, in the form of tests, quizzes, exams, etc. is conducted on a regular basis. Faculty members are from ESIGELEC and/or INSA Rouen Normandie*, from partner companies and from partner universities in France or abroad.

D THE INTERNSHIP SEMESTER

Students must intern either in a company or in a research laboratory, for a duration of 4 months (min.) to 6 months (max). The internship can be done anywhere in the world. While ESIGELEC and INSA Rouen Normandie* will provide assistance, students are expected to play an active part, as the internships are not offered automatically.

Once a student has found an internship, the internship form, providing all required information must be filled and submitted to the Internship Department at ESIGELEC. The Head of the Internship Department and the Academic Coordinator of the Master's Program must approve, thereafter the company / research laboratory, ESIGELEC and the student will then countersign the Internship Agreement. A copy of this agreement is retained by ESIGELEC, the company / research laboratory and the student.

A faculty member of ESIGELEC or INSA Rouen Normandie will be assigned the task of visiting or contacting the student at least once during the internship

After completion of the internship, the student must submit a thesis and make an oral presentation before a Board of Examiners who convene four times per year, i.e. March, June, September and November.

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The thesis:

The topic of the thesis, chosen by the student, must be communicated to the Academic Coordinator of the Master's Program for approval, within one month of starting the internship. A soft copy of this thesis must be submitted to ESIGELEC via intranet at least 2 weeks before the oral presentation.

The oral presentation:

A Board of examiners comprising a President, one faculty member from ESIGELEC or INSA Rouen Normandie and the industrial tutor (if possible) will be convened for the oral presentation conducted by the student and it must be done within four months, at the latest, of completion of the internship. The total duration of the oral presentation will be of 60 minutes (Presentation – 30 minutes + Q&A - 15 minutes + Deliberation among members of the Board of examiners).

The faculty member assigned for supervision and the Academic Coordinator of the Master's Program will be the contact persons for any questions the student may have about the internship, the thesis or the oral presentation.

E SNAPSHOT – COURSES, MODULES, DURATION, WEIGHT & ECTS CREDITS

SEMESTER 1: 30 CREDITS / 354 HOURS				
Courses	**Weight**	**Modules**	**Duration (hours)**	**ECTS Credits**
Computer Science 1	3	Introduction to Object Oriented Programming with Java	40	8
	2	Fundamentals of Data Communication and Networking	24	
	3	Fundamentals of Web-Centric Development	30	
Digital Electronics	3	Binary Logic & Digital Functions	30	9
	3	LabView	30	
	3	C Programming	30	
Communication & Language	3	Cross Cultural Awareness and Working in a Team	36	6
	3	French as a Foreign Language OR English as a Foreign Language	60	
Specialized Courses for SEDT	4	Java Project	50	7
	3	Database Management Systems	24	
Total Credits				**30**

SNAPSHOT – COURSES, MODULES, DURATION, WEIGHT & ECTS CREDITS

SEMESTER 2: 30 CREDITS / 340 HOURS				
Courses	**Weight**	**Modules**	**Duration (hours)**	**ECTS Credits**
Computer Science 2	2	Enterprise Network	24	13
	4	Object Oriented Programming with Java EE	40	
	4	Development of Mobile Application	40	
	3	Intro to .NET Framework (C#)	24	
Business Intelligence	2	Analysis & Design with UML	32	12
	4	Big Data: Challenges & Opportunities	40	
	2	Artificial Intelligence: Principles & Techniques	30	
	4	Python for Data Analysis	36	
Communication & Language 2	1	Oral Communications & Presentation Skills	14	5
	4	French as a Foreign Language OR English as a Foreign Language	60	
Total Credis				**30**

SNAPSHOT – COURSES, MODULES, DURATION, WEIGHT & ECTS CREDITS

SEMESTER 3: 30 CREDITS / 336 HOURS				
Courses	**Weight**	**Modules**	**Duration (hours)**	**ECTS Credits**
Information Systems	2	Cloud Computing	30	10
	3	PL/SQL Programming for Databases	20	
	3	Information System Security	30	
	2	Web-centric Develop-ment & ASP.NET	20	
Business Management	3	Management Control & Business	32	7
	3	Marketing In A Technical Environment	22	
	1	Intellectual Property & Internet Protection Laws	12	
Project Development & Management	2	Project management	30	9
	7	R & D Project	80	
Foreign Language	4	French as a Foreign Language OR English as a Foreign Language	60	4
Total Credits				**30**
Semester 4: Internship of 4 to 6 months				

All modules are delivered face-to-face, on campus, with all required safety measures. However, modules may be delivered partially or totally online and/or through distance mode.

F

COURSE CURRICULUM & SYLLABUS

Introduction to Object-Oriented Programming with JAVA

Module Code: MSTSI12 **Duration: 40h**

Objectives

At the end of this module students will be able to:

- Write, test and set up a Java program and documentation from a given situation
- Use vocabulary relating to OO languages within the framework of Java
- Explain the design and set up for the life-cycle of a Java program / explain the design
- Process and working of a Java program (define bytecode and explain the role of a JVM)
- Document code and create the Javadoc
- Respect Java writing code structures
- Use existing classes and packages
- Use basic Eclipse functions: editing, compiling, operating, importing and debugging

List of topics

- Storing information, communicating information, making choices, creating repetitions
- Initiation to Object-Oriented programming
- From algorithms to writing functions, classes and objects, UML classes
- Collecting objects (a fixed amount and undetermined amount), using UML

Fundamentals of Data Communication & Networking

Module Code: MSTSI11 **Duration: 24h**

Objectives

At the end of this module students will be able to:

- Understand the very basic operation of communication networks
- Distinguish between different communication technologies
- Distinguish between different communication services
- Choose communication technologies and services appropriate for given requirements
- Get a better understanding of the Internet communication services they use in everyday life

List of topics

- Basics of information transmission
- Classical telecommunications services
- Integration of telecommunication services
- Principles of networking and protocols
- TCP/IP communication architecture
- LAN/WLAN technologies
- MobilityFundamentals of Web-centric Development

Fundamentals of Web-Centric Development

Module Code: MSTSI14 **Duration: 30h**

Objectives

At the end of this module students will be able to explain:

- How the web relates to the Internet
- What HTTP is
- The notions of web server and web client
- The role of PHP, HTML,CSS, Javascript languages
- The major steps of a web project implementation
- The value of validation for web site security

The student will also be able to create a Web site which:

- Is dynamic
- Follows the separation of content and presentation principle
- Is in keeping with HTML5 and CSS standards
- Is secured against SQL injections and defacement attacks
- Is in project mode, using especially the Git version control system

List of topics

- Introduction to the internet and World Wide Web
- HTML (Hypertext Markup Language)
- Editing and viewing HTML
- Headers, titles, meta-tags
- Special characters
- Lists
- Tables
- Basic forms
- Metatags
- Cascading Style Sheets
- Embedded Anchors, Images, Links, Objects
- Dynamic web pages with PHP
- Introduction to javascript

Binary Logic & Digital Functions

Module Code: MSTEE11 **Duration: 30h**

Objectives

At the end of this module, students will be able to: analyse and design digital functions

List of topics

- Basic concepts of probability:
- Number representation
- Fundamentals of Boolean algebra
- Construction of elementary gates
- Circuits developed from combinatory logic (comparator, decoder and demultiplexer)
- Introduction to sequential logic and its basic components (D, RS, RSH, and JK flip flop circuits)
- Registers and counters
- Designing and creating a sequential system

LabView

Module Code: MSTEE15 **Duration: 30h**

Objectives

At the end of this module students will be able to:

- Design a program with LabVIEW for an electrocardiogram that monitors real and “noisy” data. This program must:
- Respect design standards
- Use standard programming and signal processing tools seen in the 2nd year
- The application must respect standard LabVIEW practices (taken from the Certified LabVIEW Developer (CLD) test) and use a modular and evolving architecture

List of topics

- Fundamental programming notions in LabVIEW
- LabVIEW programming
- Creating an interface
- Learning good LabVIEW practices for form and structure in programming

C Programming

Module Code: MSTEE10 **Duration: 30h**

Objectives

At the end of this module, students will be able to write and develop a program in C language, using:

- Functions: definitions, interests, prototypes
- 1 & 2 D arrays: syntax, use, parameters
- String functions: manipulating chains of characters
- Pointers: syntax, manipulation, using them correctly
- Structures: syntax, manipulation, establishing parameters
- Binary and text files: manipulation and relation to structures
- Dynamic allocation
- Circuits developed from combinatory logic (comparator, decoder and demultiplexer)
- Introduction to sequential logic and its basic components (D, RS, RSH, and JK flip flop circuits)
- Registers and counters
- Designing and creating a sequential system

Cross Cultural Awareness & Working in a Team

Module Code: MSTCCAWT **Duration: 36h**

Objectives

At the end of this module students will be able to:

- Recognise the different elements that make up culture
- Demonstrate the role culture plays on general and professional communication and behaviour
- Suggest ways to begin respecting and reconciling the cultural differences that make a difference
- Analyse the cultural elements inherent in different situations
- Evaluate the relative importance of different cultural elements in different communication situations
- Apply different cultural orientations to correctly analyse different situations
- Interact more sensitively within international teams
- Develop a capacity for culturally sensitive critical analysis
- Sensitively interpret different elements of verbal and non-verbal communication
- Sensitively analyse critical incidents
- Clearly distinguish between objective and subjective culture
- Integrate a new team from an initial team

List of topics

- Modern leadership models and their application
- The influence of national cultures on leadership
- The building and management of international, multidiscipline, remote and virtual teams

French as a Foreign Language

Module Code: MSTFRE1 **Duration: 60h**

Objectives

At the end of this module students will be able to:

- Oral comprehension
  - Understand standard French used in everyday situations at work, school, etc.
- Written comprehension
  - Understand texts written in standard French used in everyday situations such at work, school, etc.
- Oral expression
  - Participate in a regular day-to-day conversation on familiar topics
  - Ask and exchange information
  - Prepare and give a short formal presentation
- Written expression
  - Write short, clear and coherent texts on familiar/everyday situations with basic grammar and vocabulary

List of topics

- Revision of grammar and vocabulary
- Preparation for the Test of French Language (TCF or TEF)

English as a Foreign Language

Module Code: MSTENG1 **Duration: 60h**

Objectives

At the end of this module students will be able to:

- Oral comprehension
  - Understand standard English used in everyday situations at work, school, etc.
- Written comprehension
  - Understand texts written in standard English used in everyday situations such at work, school, etc.
- Oral expression
  - Participate in a regular day-to-day conversation on familiar topics
  - Ask and exchange information
  - Prepare and give a short formal presentation
- Written expression
  - Write short, clear and coherent texts on familiar / everyday situations with basic grammar and vocabulary

List of topics

- Revision of grammar and vocabulary
- Preparation for the Test of English for International Communication (TOEIC)

Java Project

Module Code: MSTSI40 **Duration: 50h**

Objectives

At the end of this module students will be able to:

- Familiarise themselves with real-world situations similar to that of future professional environments
- Acquire skills to exercise their initiative and independence
- Improve their organizational, interpersonal and communication skills
- Acquire time management skills

List of topics

- Designing a product
- Product testing

Database Management Systems

Module Code: MSTSI13 **Duration: 24h**

Objectives

At the end of this module students will be:

- Familiar with data modeling concepts (E/R and UML Class diagrams) used in database development
- Able to create databases and pose complex SQL queries of relational databases
- Able to develop an appreciation and familiarity in the use of DBMS's (ORACLE)

List of topics

- Introduction to databases
- Modelling using E/R and UML class diagrams
- Normal forms
- Relational algebra
- Embedded SQL (overview)
- SQL and optimization

Enterprise Network

Module Code: MSTSI21 **Duration: 24h**

Objective

The course will cover the development and technical details of the Fundamentals of Wireless Communication and recent technological developments in Mobile communication systems.

List of topics

- Introduction to WAN, LAN, MAN, OSI Model, TCP/IP
- Overview of wireless communications and systems
  - Review of digital communications
  - Cellular systems from 1G to 3G
  - Wireless 4G and 5G systems
  - Trunking
- Radio Propagation and Propagation Path-Loss Model
  - Free-space attenuation
  - Multipath channel characteristics
  - Path-loss models
- Fundamentals of Cellular Communications
  - Hexagonal cell geometry
  - Co-channel interference
  - Cellular system design
  - Sectoring using directional antennas
  - Link Budget analysis
- Multiple Access Techniques
  - Frequency division multiple access (FDMA)
  - Time division multiple access (TDMA)
  - Orthogonal Frequency Division Multiple Access (OFDMA)
  - Random access methods
- Current Standard Wireless Communications
  - Introduction to Long Term Evolution Technologies (LTE)
  - Introduction to IEEE 802.11 (Wi Fi): Physical layer communications

Object-Oriented Programming with Java EE

Module Code: MSTSI22 **Duration: 40h**

Objective

At the end of this module students will have an understanding of:

- The significance and role of servlets
- The main concepts of JSP and servlets and apply them
- Development of complex applications using Java programming

List of topics

- Introduction to servlets
- Session with servlets
- JSPs main concepts
- Servlets and JSP pages
- Managing data flows
- Java processes
- Database connectivity with JDBC

Development of Mobile Applications

Module Code: MSTSI23 **Duration: 40h**

Objective

At the end of this module, students will be able to create an Android app.

List of topics

- Activities and Intents
- Basic UI elements (Layouts, Input controls, etc.)
- Async task, threading and handlers
- Data storage
- Networking using Android
- Location and Maps

Introduction to .NET Framework (C#)

Module Code: MSTSI24 **Duration: 24h**

Objectives

At the end of this module students will be able to explain:

- What the .NET framework is
- The .NET-specific vocabulary
- Which languages are available and when to use them
- The role of the ILAsm assembly language
- The strengths and weaknesses of C#/.NET and how they compare to JAVA and the JVM
- What LINQ is and when it should be used

Students will also be able to:

- Write a simple ILAsm programs using a simple text editor
- Compile and decompile a .NET programs written in IALSM and C# using the command line
- Write C# programs using the Visual Studio platform
- Manipulate data using the .NET framalso ework components
- Use the MSDN documentation and the http://www.codeproject.com resource

List of topics

- .NET, an improved JVM ? Practical on ILAsm.
- From Eclipse/JAVA to Visual Studio/C#
- Data retrieval and manipulation using .Net components
- Advanced data manipulation with LINQ

Analysis and Design with UML

Module Code: MSTSI2A **Duration: 32h**

Objectives

At the end of this module students will be able to:

- Be familiar with the process for designing software applications, with a special focus on the Unified Modeling Language (UML) and Java as design tools
- Be familiar with the major steps in software design, including the development of user requirements, specifications, data bases, user interfaces, and software models

List of topics

- Overview of software design: challenges, accomplishments, and failures
- Overview of software lifecycle model and its variants
- Overview of object oriented design – Java classes, objects, inheritance, associations
- Requirements analysis and use case design – UML use case and sequence diagrams
- Class design – UML class diagrams
- Modeling activities and interactions – UML activity and state diagrams

Big Data: Challenges and Opportunities

Module Code: MSTSI26 **Duration: 40h**

Objective

At the end of this module, students will be able to understand the issues and contributions of Big Data as well as the technologies to implement it.

List of topics

- Understand the concepts and challenges of Big Data
- Big Data technologies and main market distribution (Cloudera, Hortonworks, Spark, Storm…)
- Techniques for analyzing Big Data (data preparation, machine learning, clustering…)
- Data visualization

Artificial Intelligence - Principles and Techniques

Module Code: MSTSI28 **Duration: 30h**

Objective

At the end of this module, students will be able to understand notions of artificial intelligence and related issues.

List of topics

- Presentation of different types of algorithms:
  - Supervised
  - Unsupervised
  - Statistical
  - Non-statistical
  - Reinforcement
  - Deep learning
- Agent paradigms:
  - Hierarchical
  - Reactive
  - Cognitive
  - Hybrid
- Machine Learning Algorithms:
  - IDecision Tree
  - Bayesian
  - Regression
  - SVM
  - K-means
- Neural networks:
  - Gradient Descent
  - Evolutionary Algorithms
  - Genetic Algorithm

Python for Data Analysis

Module Code: MSTSI29 **Duration: 36h**

Objective

At the end of this module, students will be familiar with major python libraries useful that help data science developers.

List of topics

- Mathematical library:
  - NumPy is a library for the Python programming language, designed to manipulate matrices or multidimensional arrays as well as mathematical functions operating on these arrays.
  - Statsmodels is a Python module that provides classes and functions for the estimation of many different statistical models, as well as for conducting statistical tests, and statistical data exploration.
- Data Analysis:
  - Pandas is a python library that allows the manipulation and analysis of data.
- Visualization and Plotting:
  - Matplotlib is a library for creating static, animated, and interactive visualizations.
  - Seaborn is a data visualization library that provides a high-level interface for drawing attractive and informative statistical graphics.

Oral Communication and Presenting Skills

Module Code: MSTOCPS **Duration: 14h**

Objectives

At the end of this module students will be able to:

- Have a clear model of what constitutes successful and unsuccessful presentations
- Have practiced giving formal presentations in English.
- Be more aware of their own downfalls when presenting

List of topics

- Methods for putting together an oral presentation
- Practice

Cloud Computing

Module Code: MSTSI31 **Duration: 30h**

Objectives

At the end of this module students will:

- Be familiar with fundamental cloud computing topics, in relation with both technology and business considerations
- Be able to develop a web project using the Google Cloud platform (PaaS cloud model)

List of topics

- Fundamental cloud computing terminology and concepts
- Basics of virtualization
- Specific characteristics that define a cloud

French as a Foreign Language

Module Code: MSTFRE2 **Duration:60h**

Objectives

At the end of this module students will be able to:

- Oral comprehension
  - Understand standard French used in everyday situations at work, school, etc.
- Written comprehension
  - Understand texts written in standard French used in everyday situations such at work, school, etc.
- Oral expression
  - Participate in a regular day-to-day conversation on familiar topics
  - Ask and exchange information
  - Prepare and give a short formal presentation
- Written expression
  - Write short, clear and coherent texts on familiar/everyday situations with basic grammar and vocabulary

List of topics

- Revision of grammar and vocabulary
- Preparation for the Test of French Language (TCF or TEF)

English as a Foreign Language

Module Code: MSTENG2 **Duration: 60h**

Objectives

At the end of this module students will be able to:

- Oral comprehension
  - Understand standard English used in everyday situations at work, school, etc.
- Written comprehension
  - Understand texts written in standard English used in everyday situations such at work, school, etc.
- Oral expression
  - Participate in a regular day-to-day conversation on familiar topics
  - Ask and exchange information
  - Prepare and give a short formal presentation
- Written expression
  - Write short, clear and coherent texts on familiar / everyday situations with basic grammar and vocabulary

List of topics

- Revision of grammar and vocabulary
- Preparation for the Test of English for International Communication (TOEIC)

PL/SQL Programming for Databases

Module Code: MSTSI27 Duration: 20h

Objectives

At the end of this module students will be able to:

- Write PL/SQL modular programs to extract and manipulate information from an oracle database using, if necessary, dynamic SQL statements
- Automate information processing using triggers
- Design and implement exceptions
- Use appropriate structure to implement the specified functionality
- Use appropriate SQL language clause (join, subquery or group) to query an oracle database
- Explain the role of indexes and transactions
- Create and query a view

List of topics

- Pre-requisite check : SQL queries using joins, subqueries and/or groups, SQL data creation and manipulation statements
- SQL topics among : views, creation and query using views, indexes, main transactions, instructions, data types
- General overview of PL/SQL
- Interaction with the database (one row and multiple rows)
- Functions & procedures (exceptions)
- Triggers (exceptions

Information System Security

Module Code: MSTSI33 Duration: 30h

Objectives

At the end of this module students will:

- Be familiar with technologies used to maintain and develop the security of the information systems in companies
- Be familiar with some guidelines and examples regarding security policies in companies

List of topics

- Overview on cryptography
  - Substitution ciphers, one-time-pads, stream ciphers, block ciphers
  - Public key cryptography, one-way hash-functions, digital signatures
  - PGP, SSL
- Internet and IP security
  - E-Mail, MIME-types, active content security (including e.g. viruses, trojan horses, worms, phishing, social engineering)
  - VoIP, WLAN
  - Firewalls
  - Packet filter, application gateways, web application firewalls
  - Firewall topologies
  - Intrusion detection

Web-centric Development and ASP.NET

Module Code: MSTSI34 **Duration: 20h**

Objectives

At the end of this module students will be able to:

- Gain a thorough understanding of the philosophy and architecture of web applications using ASP.NET
- Acquire a working knowledge of web application development using web forms and visual studio
- Optimize an ASP.NET web application using configuration, security, and caching
- Access databases using ADO.NET and LINQ
- Implement rich client applications using ASP.NET AJAX
- Customize web applications through the use of HTTP handlers and modules

List of topics

- Presentation of web applications using ASP.NET
- Development of web applications using ASP. NET
- Notions of optimization and customization of web applications

Management Control and Business

Module Code: MSTSI35 **Duration: 32h**

Objectives

At the end of this module students will be able to:

- Acquire the fundamentals of accounting (introduction to general accounting and financial statements)
- Have an understanding of the methods and systems used by managers to achieve their objectives of planning, controlling and decision making.
- Develop analytical skills
- Develop problem-solving skills including understanding all financial and qualitative Implications of business decisions
- Define different types of organizations, their objectives and the manager's need for information

- Recognize cost behaviour patterns
- Perform cost-volume-profit and breakeven analysis
- Calculate inventory valuation under the direct cost concept, evaluate cost variances, prepare flexible budgets
- Define responsibility accounting

List of topics

- Daily operations
- Income statements
- Inventory, inventory valuation methods
- Accounting management tools
- Management / cost accounting
- The financial statements
- Decision making
- Managerial accounting and the business organization
- Cost behaviour / cost-volume relationship

Marketing in a Technical Environment

Module Code: MSTSI36 Duration: 22h

Objective

At the end of this module students will:

- Be familiar with issues in new product development
- Be familiar with marketing concepts
- Be familiar with marketing strategies used in new product development
- Be able to describe the Stage-Gate model of NPD
- Understand the use of Nagel's Pricing Pyramid

List of topics

- Market research methods
- Market segmentation
- Product positioning (4 Ps)
- Price elasticity
- Cross functional integration
- The champion role
- Business intelligence
- Cross-cultural issues in marketing
- 'Start-Up!' simulation that demonstrates marketing issues in NPD
- Brand Management and the role of advertising
- Market Orientation and Market Myopia

Intellectual Property & Internet Protection Laws

Module Code: MSTSI37 Duration: 12h

Objectives

At the end of this module students will:

- Be familiar with constraints of laws
- Be familiar with the French National Commission in charge of Privacy Protection, how it works and what its powers are
- Be aware of the responsibilities of everybody inside an organization
- Be aware of the responsibility of the internet user, regarding in particularly the intellectual property

List of topics

- Intellectual property (IP) laws (Trademarks, Patents, Copyright, Domain Names & Design) that can be used / displayed on the Internet
- Internet & web laws
- IP infringements on the Internet
- E-commerce, e-contracts, such as general terms of use and general conditions of sale, licence contracts
- Internet user duties and rights
- Web hosting provider duties and liability
- Personal date protection in particularly in companies and on social networks
- Privacy Protection

Project Management

Module Code: MSTPM **Duration: 30h**

Objectives

At the end of this module students will be able to:

- Appreciate the need for project management including formal methods, as a recognised discipline
- Appreciate the need for effective planning, control and delivery mechanisms
- Understand the complexities of different types of computing projects and some of the methods used to manage them
- Apply some of the skills and knowledge learned in any future project (including during other module(s) of this course, and, in particular, documentation for development project)

List of topics

- What is a project? The need for PM, formal methods
- Managing large, complex, international projects
- Un peu de franglais (PM culture & language in English & French)
- Management of projects, project life cycle, roles of the project manager and stakeholders
- Stakeholder management, scope, creep
- Work planning, project breakdown structures and estimating
- Resource planning, estimating, management
- Risk identification, analysis, management
- PERT and Gantt charts, their use and shortcomings
- PM planning tools (including practical sessions with MS Project)
- Change control, documentation, configuration management
- Project control, quality, documentation, delivery management
- Project closure; maintenance projects
- Types of computing projects and risks; computing PM methods
- Cost-benefit analysis and project accounting may be touched upon, but are not in the scope of this course

Research & Development Project

Module Code: MSTSI38 **Duration: 80h**

Objectives

At the end of this module students will be able to:

- Improve their organizational skills (within a team, facing deadlines) and manage their time
- Improve their communication skills
- Work in a real-world situation close to their future professional environments
- Filter and identify relevant online information according to a targeted subject
- Constitute a bibliographical study
- Develop functional specifications and success strategies
- Estimate the workload of each identified task
- Analyse their production capacity
- Design and build computer applications with current standards and new opportunities
- Integrate research approaches
- Evaluate the quality level for a developed application
- Present their work and justify the outcome

List of topics

- State of the art practices
- Technical / feasibility studies
- Research methodologies and approaches
- Information processing
- Experimental results and evaluation

French as a Foreign Language

Module Code: MSTFRE3 **Duration: 60h**

Objectives

At the end of this module students will be able to:

- Oral comprehension
  - Understand standard French used in everyday situations at work, school, etc.
- Written comprehension
  - Understand texts written in standard French used in everyday situations such at work, school, etc.
- Oral expression
  - Participate in a regular day-to-day conversation on familiar topics
  - Ask and exchange information
  - Prepare and give a short formal presentation
- Written expression
  - Write short, clear and coherent texts on familiar/everyday situations with basic grammar and vocabulary

List of topics

- Revision of grammar and vocabulary
- Preparation for the Test of French Language (TCF or TEF)

English as a Foreign Language

Module Code: MSTENG3 **Duration: 60h**

Objectives

At the end of this module students will be able to:

- Oral comprehension
  - Understand standard English used in everyday situations at work, school, etc.
- Written comprehension
  - Understand texts written in standard English used in everyday situations such at work, school, etc.
- Oral expression
  - Participate in a regular day-to-day conversation on familiar topics
  - Ask and exchange information
  - Prepare and give a short formal presentation
- Written expression
  - Write short, clear and coherent texts on familiar / everyday situations with basic grammar and vocabulary

List of topics

- Revision of grammar and vocabulary
- Preparation for the Test of English for International Communication (TOEIC)

Note: The program can be modified in keeping with the faculty member's prerogatives or organizational constraints.

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