COURSE OUTLINE 2023 - 2025

MASTER IN SCIENCES AND TECHNOLOGY

SOFTWARE ENGINEERING & DIGITAL TRANSFORMATION

In partnership with

INSA
ROUEN NORMANDIE

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A PROGRAMME 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 2023 and January 2025***.

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.

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.

*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 2024 and January 2025 for students granted direct entry into the second semester

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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	20	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	PL/SQL Programming for Databases	20	
	2	Artificial Intelligence: Principles & Techniques	30	
	2	Data Driven Applications with R	20	
Communication & Language 2	1	Oral Communications & Presentation Skills	14	5
	4	French as a Foreign Language OR English as a Foreign Language	60	
Total Credits				**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	Information Systems & Organizations	20	
	3	Information System Security	30	
	2	Web-centric Development & 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 programme 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 programme / 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 programme 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: 20h

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

- WAN, LAN, MAN
- OSI Model
- TCP/IP
- Internet network
- Modern communication standards: 1G,2G,3G,4G and 5G standards
- Cellular Concept and Cellular System Fundamentals
- Trunking Cell Splitting and Sectoring Techniques
- Multiple Access Techniques, FDMA, TDMA, CDMA and OFDMA
- Link Budget analysis

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 programmes using a simple text editor
- Compile and decompile a .NET programmes written in IALSM and C# using the command line
- Write C# programmes 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

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)

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

Data Driven Applications with R

Module Code: MSTSI29   Duration: 20h

Objective

At the end of the module, students will be able to program in R and use
R for effective data analysis.

List of topics

- ○ Explain the R value for the processing of big data
- ○ Load data from various sources
- ○ Clean, explore and visualize data
- ○ Present the results of its analysis

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

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)

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
- ○ Software as a service (SaaS), platform as a service (PaaS) and infrastructure as a service (IaaS)
- ○ Cloud delivery models
- ○ Create and deploy the first application on the Google cloud platform
- ○ Saving the data into the cloud
- ○ Google cloud SQL service
- ○ Google cloud data store service
- ○ Exploiting the data store using Objectify
- ○ Google blob store service (special case of Google storage service)
- ○ Google account API

Information Systems & Organizations

Module Code: MSTSI32   Duration: 20h

Objectives

At the end of this module students will be able to develop an understanding of the complex relationship between technical knowledge and business practice.

List of topics

- The value of IT
- IT strategic alignment
- IT and customer interaction
- IT and the value chain / integration / collaboration
- IT and organizational change (adoption / acceptance / appropriation of IT)
- IT switching costs, network effects and technology lock-in
- IT and society
- Knowledge management and collective intelligence

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 programme can be modified in keeping with the faculty member's prerogatives or organizational constraints.

G TO EARN THE MASTERS DEGREE

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.

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 and 120 credits to be awarded the Master's degree.

The board of examiners that determines whether or not a student can be awarded the Master's Degree comprises a President, faculty members and representatives of the managing staff of ESIGELEC and INSA Rouen Normandie. This board, chosen by the Director of ESIGELEC, convenes up to a maximum of four times per year, i.e. April, July, September and December.

H EVALUATION, RESPONSIBILITES & SUPPORT SERVICES

- One ECTS credit corresponds to about 25 hours of course work (lectures, tutorials, lab work, projects, practical work, evaluation, individual work).
- The Master's Program is divided into several weighted courses, all of which include one or more weighted modules. Each course represents a certain number of credits.
- The score of a module is the average of the weighted scores of the different evaluation processes conducted within the same module.
- The score of a course is the result of the weighted averages of all modules of the course.
- The final overall score of the student is the result of the weighted averages of all courses of the Master's Program.
- The total number of ECTS credits of the Master's Program is equal to the total of all the ECTS credits of its courses.

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Evaluation may include tests, quizzes, presentations or other formats as decided by the faculty members, who may also authorise the use of reference documents or calculators, if they deem it necessary. Each such test will be graded on a maximum mark of 20.

Students who earn an overall average of 12/20 minimum in semester 1 of the Master's Program (likewise in semesters 2 or 3), but scores less than 10/20 and more than 9/20 in only one course in semester 1 (likewise in semesters 2 or 3), will not be required to retake any exam in the said course and will be awarded the corresponding ECTS credits.

Students who are granted entry directly to the second semester, beginning February 2024, will automatically be awarded 30 ECTS credits, equivalent to the first semester of the Master's Program.

A statement of marks is sent to the students at the end of each academic semester and later on, after they are evaluated by the Board of examiners of ESIGELEC and INSA Rouen Normandie*.

The board of examiners that determines whether or not a student can be awarded the Master's Degree comprises the President, faculty members and representatives of the managing staff of ESIGELEC and INSA Rouen Normandie. This board, whose members are nominated by the Director of ESIGELEC, convenes up to a maximum of four times per year, i.e. April, July, September and December.**

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**Appeal: a student can appeal for a review of the decision to award the degree, within fifteen days of the Board of examiners announcing its decision. The appeal will be examined at the next occasion, when the said board convenes. The appeal, in the form of a letter highlighting the reason why the student wishes to appeal, must be signed by the student and be addressed to the Director for Academic Affairs & International Relations of ESIGELEC. This letter must be submitted along with all relevant supporting documents.

RESPONSIBILITIES

Students are responsible for:

- Managing their studies and for ensuring that they adhere to ESIGELEC's published deadlines, policies and procedures. Students must also seek advice, when necessary, to ensure they are on track to complete within the specified maximum period.

- Following up on instructions from the Academic Coordinator.

- Keeping track of their visa status and following up on any procedures they may be required to complete, in order to ensure that their presence on French territory is regularised.

SUPPORT SERVICES

- The Academic Coordinator of the Master's program will monitor the student's progress and provide advice and guidance if necessary.

- While internships are not offered automatically, the internship department of ESIGELEC provides assistance.

- The International Relations Office of ESIGELEC provides assistance to help students acquaint themselves with the environment at ESIGELEC, by way of presentations during the welcome week. This office is also available for any general questions students may have during their study period.

- Within the International Relations Office, a dedicated team helps students with all information and procedures students must complete or follow up on, to ensure that their visas / residence permits are valid while on French territory.

ACADEMIC PROGRESSION

Academic progression is the process by which a student advances in the programme of study, by meeting its academic and administrative requirements.

AFTER COMPLETION OF YEAR 1* AND RETAKEN EXAMS

- A student who earns 60 ECTS credits will gain entry into year 2.
- A student who earns between 42 and 59 ECTS credits will be allowed to enter year 2, but will have to retake, during the course of year 2, all or some of the exams in all or some of the modules, of all the courses of year 1, for which the student has not yet earned the requisite credits, and as advised by the Academic Coordinator of the Master's Program.
- A student who earns between 18 and 41 ECTS credits will have to redo year 1 (only the courses for which the requisite ECTS credits have not yet been earned), during the course of the following year. Failure to earn the 60 required ECTS credits of year 1 after redoing year 1, will result in entry into year 2 being refused and the degree not being awarded.
- A student who does not earn a minimum of 18 ECTS credits will be disqualified from the program and will not be awarded the degree.

AFTER COMPLETION OF YEAR 2** AND RETAKEN EXAMS

- A student must earn a total of 120 ECTS credits for years 1 & 2, to be awarded the Master's Degree.
- A student who fails to earn all the ECTS credits for year 1 before the end of year 2, will be required to redo year 1 (only the courses of year 1 for which the requisite ECTS credits have not yet been earned) during the course of the following year, failing which, the student will be disqualified from the program and will not be awarded the degree.
- A student who fails to earn all the ECTS credits for year 1 before the end of year 2 and who has also failed to earn at least 21 credits in semester 3, will not be awarded the degree.

- A student who earns between 21 and 29 ECTS credits for semester 3 will have to retake, during the course of the following year, all or some of the exams in all or some of the modules, of all the courses of semester 3, for which the student has not yet earned the requisite credits and as advised by the Academic Coordinator of the Master's Program. If the student fails to earn the 30 ECTS credits of semester 3 during the course of the following year:
  - He/she will be required to redo semester 3 the following year, (only the courses for which the requisite ECTS credits of semester 3 have not yet been earned), unless the student has already redone Year 1. failing which, the student will be disqualified from the program and will not be awarded the degree.
  - If the student has already taken year 1, he/she will be disqualified from the program and will not be awarded the degree.
- A student who earns between 10 and 20 ECTS credits for semester 3:
  - will be disqualified from the program if year 1 was already repeated or if year 1 must be repeated,

    OR
  - must redo semester 3 (only the courses of semester 3 for which the requisite ECTS credits have not yet been earned) during the course of the following year.
- A student who earns less than 10 ECTS credits in semester 3 will be disqualified from the program and will not be awarded the degree.

*Year 1 = Academic year 1
** Year 2 = Academic year 2

- If a student does not earn the 30 ECTS credits of semester 4 (Internship), the Academic Coordinator of the Master's Programme may:
  - Instruct the student to submit a fresh professional thesis and/or redo the oral presentation.

    OR
  - Instruct the student to redo a fresh internship, including submission of a professional thesis and an oral presentation, within a maximum period of 2 years, after the final academic semester.

    OR
  - Deny the award of 30 ECTS, on the grounds of misconduct during the internship.

MAXIMUM TIME FOR COMPLETION

A student has a maximum of two years after the last academic semester of the Master's program to satisfy all academic and administrative requirements. A student cannot retake year 1 or year 2 more than once, similarly, a student who has already retaken or who has been advised to retake year 1, will not be allowed to retake year 2. In both cases the student will be disqualified from the program and will not be awarded the degree.

Re-admission fees for Year 1:
- 3,400 € to redo courses of semester 1 only
- 4016.67 € to redo courses of semester 2 only
- 5,933.34 € to redo courses of semesters 1 & 2

Re-admission fees for Year 2:
- 4016.67 € to redo courses of semester 3 or 4 only
- 6426.67 € to redo courses of semesters 3 & 4

J ACADEMIC MALPRACTICE

Honesty, trust, fairness, respect and responsibility are values that students must commit to, as they are the very foundation of academic practice. Instances that amount to failures to respect the integrity and fairness of the evaluation process include, but are not limited to:

- Collusion is the preparation or production of work for assessment jointly with another person or persons unless explicitly permitted by the faculty delivering the course. An act of collusion is understood to encompass those who actively assist others or allow others to access their work prior to submission for assessment. In addition, any student is guilty of collusion if they access and copy any part of the work of another to derive benefit irrespective of whether permission was given.

- Misconduct in examinations held on campus includes having, or attempting to gain access, during an examination, to any books, memoranda, notes (including notes on paper or transcribed on the student's skin), unauthorised calculators, phones, watches or other internet enabled devices or any other material, except those authorised by the invigilator. Misconduct also includes aiding or attempting to aid another student or obtaining or attempting to obtain aid from another student, or any other communication within the examination room.

- Plagiarism (>20%) of reports, presentations, or computing programs, obtained by any means (book, magazine, other students, electronic files, Internet, work previously submitted in another course). Plagiarism is the use, without acknowledgement, of the intellectual work of other people, and the act of representing the ideas or discoveries of another as one's own in written work, submitted for evaluation. You can avoid plagiarism by referencing, citing, paraphrasing or quoting your source correctly.

K ATTENDANCE POLICY

ESIGELEC expects students to take full responsibility for their academic progress. Fundamental to success in the Master's programme is regular class attendance for which, this policy defines student and faculty rights and responsibilities. Regular class attendance, irrespective of the mode of course delivery, is mandatory for all lectures, tutorials, practical work, projects, conferences and seminars. Each faculty member has the right to establish requirements for attendance and participation unique to each of his or her courses. Course requirements (e.g., homework assignments, examinations, oral presentations, lab work, participation in discussion, etc.) are not waived due to absence from class.

Attendance will be monitored by the faculty members at the beginning of each class and the attendance record will be maintained by the Studies Office of ESIGELEC.

It is also the responsibility of students to be familiar with ESIGELEC's attendance policy.

Absence from class:

Unexcused absence

An unexcused absence is when students miss classes for reasons not accepted by ESIGELEC. Arriving late or leaving class early without appropriate documentation/ justification will be counted as an unexcused absence. Some reasons for an unexcused absence include waking up late, missing bus/tram, traveling for personal reasons, visits from family/friends etc.

Excused absence

The only cases that are considered an excused absence is hospitalisation, administrative obligations or exceptional circumstances approved by the Studies office of ESIGELEC.

Late entry into class:

More than 10 minutes: the student will be refused entry into the classroom and this will be recorded the faculty member concerned. Every such occurrence will be considered as an unexcused absence. An oral & written warning will be issued after 5 such occurrences. A stern oral & written warning will be issued after 10 occurrences. 20 such occurrences may lead to the student's dismissal from ESIGELEC.

Less than 10 minutes: the student will be allowed to attend the class but this will be recorded by the faculty concerned. 3 such occurrences will be considered as 1 case of unjustified absence

L RETAKING EXAMS

If a student has scored less than 10/20 in one or more courses in the academic semesters at ESIGELEC, the student will be required to retake any exam(s) in any module(s) of course(s) as advised by the Academic Coordinator of the Master's Program (even if the final overall score of the student in the Master's Program is greater than 10/20).*

Retaken exams will be conducted by the Studies Office of ESIGELEC:

- in April, for courses completed in semester 1,
- in August / September, for courses completed in semester 2 and 3

The new average(s) of the course(s) must be greater than 10/20 to earn the requisite credits.

The score(s) in the retaken module will be the higher of the two scores, between the one in the retaken exam(s) and the previous score of the student.

If the student does not retake an exam as advised by the Academic Coordinator, the student will be marked 0/20 for the retaken exam.

*A student who scores an overall average of 12/20 minimum in a given semester of the Master's Program and scores less than 10/20 and more than 9/20 in only one course in this semester, will not be required to retake any exam in the said course and will be awarded the corresponding credits.

M MAINTAINING YOUR STUDENT VISA STATUS

This information is for students who need a visa to enter French territory. Students coming to France for a duration of more than 90 days will be granted a long stay visa and the others will be granted a short stay visa.

Once you are in France on a student visa, it is important to maintain your student status during the study period. No action of the student must detract from this purpose.

WHEN YOU ARRIVE IN FRANCE

Students who come to France with a long-stay visa must complete an online process within the first three months of entering French territory, in order for their student status to be regularised. The International Relations Office of ESIGELEC will provide students the necessary assistance for this procedure.

DURING THE STUDY PERIOD

While studying in France, students must be officially registered at the Higher Education Institution that has issued the Final Offer of Admission, in this case ESIGELEC, students must attend all classes, and maintain normal academic progress.

Note: You will not be allowed to transfer to another HEI during the period of study for which you have been granted a student visa.

INTERNSHIP

The student visa is applicable for the period of the internship also, which is a mandatory requirement of the Master's Program

Note: A student visa is different from a Work Permit and is not valid for employment.

IF YOU ARE LEAVING THE SCHENGEN ZONE DURING THE STUDY PERIOD

The International Relations Office of ESIGELEC will be able to advise you in this regard alternately, you may contact the Consulate of France that issued your visa.

PART-TIME WORK

Students in France can work part-time for 964 hours annually, which is 20 hours per week on a student visa. If you are on a 6 month program, you are allowed to work 472 work hours. Your part-time work schedule must not interfere with your studies at ESIGELEC. We advise students against taking up a part-time jobs, as it may have a negative impact on their academics.

You must not confuse part-time work with full-time employment. If you choose to work on a full-time basis, without authorization, you will be forced to leave France immediately, and you may not be able to re-enter the French territory at a later date.

PROGRAM COMPLETION

After completion of the academic semesters at ESIGELEC, students have a maximum of two years to find and finish the internship, submit the professional thesis, complete the oral presentation, and earn all the ECTS credits of the Master's Program, failing which they will not be awarded the degree from ESIGELEC and INSA Rouen Normandie*, except in some exceptional cases, approved both by ESIGELEC and INSA Rouen Normandie.
Students will retain the Registered Student status till the end of the academic year 2024/2025.
Students who, at the end of the academic year 2024/2025 (likewise for 2025/2026), have already started but have not yet: completed the internship / submitted the professional thesis / completed the oral presentation and have earned all the ECTS credits of the academic semesters will retain the Registered Student status for the academic year 2025/2026 (likewise for 2026/2027), without having to pay the applicable fees.
Students who, at the end of the academic year 2024/2025 (likewise for 2025/2026), have not started the internship or earned the required ECTS credits for the academic semesters, must re-register for the academic year 2025/2026 (likewise for 2026/2027), by paying the applicable fees of 601 Euros, failing which, they will be struck off the rolls of ESIGELEC and will cease to be students of the school.

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The validity of the Registered Student status will end automatically and immediately after the Board of examiners of ESIGELEC and INSA Rouen Normandie declare that the student has cleared all requirements to be awarded the degree OR after a maximum duration of two years after completion of the academic semesters, whichever is earlier, except in some very specific cases approved both by ESIGELEC and INSA Rouen Normandie.

N THE BOARD OF STUDIES

The Board of Studies, whose members are representatives from industry, universities, INSA Rouen Normandie & ESIGELEC, oversees the course content and recommends changes when necessary.

The Board of Studies, which meets at least once every two years, also ensures that the course content and laboratories are streamlined in keeping with the changing industry requirements. A meeting between the Academic Coordinator of the Master's Programme and all faculty members is convened at the end of each module, to assess the relevance of the content, equipment and issues which may have occurred while delivering the module.

A meeting is also convened every two months between the Academic Coordinator of the Master's Programme and the students to discuss academic and non-academic issues.

School of Engineering
Supported by the Chamber of Commerce and Industry of Rouen