MGCER

MUTHOOT GLOBAL CENTRE FOR EDUCATION AND RESEARCH, INDIA

ESIGELEC

SCHOOL OF ENGINEERING

SMART AND CONNECTED SYSTEMS

ROUEN | POITIERS

TRANSFER PROGRAMME

AUTOMOTIVE EMBEDDED SYSTEMS

(2024-2025)

Master of Science - MSc. in Automotive Embedded Systems
ESIGELEC, Graduate School of Engineering, France

Accredited by

CONFÉRENCE DES GRANDES ÉCOLES

BIENVENUE EN FRANCE

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PROGRAMME OBJECTIVES

The Master's Programme in Automotive Embedded Systems, seeks to equip students with the relevant knowledge, professional skills, practical experience and basic management skills, for industry. They will learn how to design, develop systems and equipment in the aeronautic, space, automobile and electronics sectors.

The mandatory internship gives students hands-on experience, in an international setting. Our graduates find job opportunities as developers, project managers, or consultants..

The multicultural environment at ESIGELEC allows students to discover new cultures and languages.

PROGRAMME STRUCTURE

SEMESTER 1 (JULY-DECEMBER 2024)

Location: MUTHOOT GLOBAL CENTRE FOR EDUCATION AND RESEARCH, India

Course delivery: lectures, tutorials, practical work, projects and seminars.

Evaluation: tests, quizzes, oral & written exams, etc. conducted on a regular basis

Faculty: MGCER, India

The rules and regulations for this semester are prescribed by MGCER, India (approved by ESIGELEC).

SEMESTER 2 (FEBRUARY 2025-JULY 2025)

Location: ESIGELEC, France

Course delivery: lectures, tutorials, practical work, projects.

Evaluation: tests, quizzes, oral & written exams, etc. conducted on a regular basis

Faculty: ESIGELEC, partner universities, industry captains from France and / or abroad.

The rules and regulations for this semester are prescribed by ESIGELEC (approved by MGCER, India).

SEMESTER 3: INDUSTRIAL / RESEARCH INTERNSHIP(S)

In the third semester, students must do a mandatory internship in a laboratory or in industry, for a period of 4 months (min.) to 6 months (max.).

While ESIGELEC and / or MGCER, India provide assistance to find internships, students are expected to play an active part, as internships are not provided automatically.

SEMESTER ONE

MUTHOOT GLOBAL CENTRE FOR EDUCATION AND RESEARCH, INDIA

Module Summary

SEMESTER 1 – MGCER, INDIA: JULY 2024- DECEMBER 2024								
Module Name	Hrs / Week				Exam Duration (hrs)	Maximum Marks		
	Lecture	Tutorial	Practical	Credits		Internal Assessment	Final Exam	Total
Sensors and Transducers	3			3		50	50	**100**
Vehicular Adhoc Networks	3			3		50	50	**100**
Real Time Operating Systems	3			3		50	50	**100**
Embedded Systems	3			3		50	50	**100**
Elective 1	3			3		50	50	**100**
Sensors and Transducers Lab			3	1	3	50	50	**100**
Vehicular Adhoc Networks Lab			3	1	3	50	50	**100**
Real Time Operating Systems Lab			3	1	3	50	50	**100**
Embedded Systems Lab			3	1	3	50	50	**100**
Elective 1 Lab			3	1	3	50	50	**100**
Minor Project 1				4		100		**100**
Seminar 1				1		100		**100**
French Language 1	5				3	100		**100**
TOTAL	**515 HOURS / 30 CREDITS**							

List of Electives

MGCER, India
Elective - 1
Module
Linux and Scripting Languages
Linux Internals and Programming
Process Dynamics and Control
Microcontrollers and its Applications
Internet of Things

All modules are delivered face-to-face, on campus, with all required safety measures.

module description

Semester 1: MGCER, India

Sensors and Transducers

Module Code: AES 601 **Duration: 72h**

Objectives:

At the end of this module students will:

- Be familiar with the working principles of different sensors available in the market
- Be able to design consideration of sensors depending on the applications
- Be able to build a general-purpose Data Acquisition System using multiple sensors
- Be able to manage a group project demonstrating application of sensors

List of topics:

- Working principles of Sensors
- Sensor selection parameters
- Working principles of:
  - Mechanical & Electromechanical sensors
  - Thermal sensors
  - Magnetic sensors
  - Electro-analytical sensors
  - Smart sensors
- Application of sensors in the area of:
  - Automotive industry
- Recent trends in Sensor technology

Vehicular Adhoc Networks

Module Code: AES 603 **Duration: 72h**

Objectives:

At the end of this module students will be:

- Familiar with the concept of Adhoc Networks in the Vehicular scenario
- Familiar with vehicular safety applications and information dissemination in VANETs
- Familiar with vehicular mobility models
- Able to simulate vehicular movements, using different simulation tools and perform its analysis

List of topics:

- Taxonomy of Vehicular Communication Systems
- VANET applications, principles and challenges
- Cooperative System Architecture and Safety applications
- Information dissemination in VANETs
- Vehicular Mobility Modeling and Integration with Network Simulators
- MAC Layer and Scalability Aspects of Vehicular Communication Networks
- Data Security in Vehicular Communication Networks

Real Time Operating Systems

Module Code: AES 655 Duration: 72h

Objectives:

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

- Examine the evolution of operating systems and real time operating systems
- Explain the concepts involved in process management
- Design programmes based on threads
- Explain the concepts involved in scheduling of processes
- Explain the concepts involved in synthetization of processes
- Explain the concepts involved in detecting, avoiding and recover from dead locks
- Explain the concepts involved in memory management
- Explain the concepts of real time systems and real time operating systems

* This course will also help students to improve their programming skills, also understand the real time systems, multi-threaded programming concepts

List of topics:

- Various types of processor systems and their working operating systems
- Types of threads and multi-threaded programming
- Scheduling algorithms
- Synchronization and deadlocks
- Memory management and real-time scheduling of algorithms

Embedded Systems

Module Code: AES 609 Duration: 72h

Objectives:

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

- Employ the knowledge of ARM Processor architecture in programming ARM Microcontrollers
- Explain the concept of Memory map, Processor Modes, Banked Registers, Interrupts and Exception Handling of ARM Processor
- Employ the knowledge of Microcontrollers to build Real Time Embedded systems
- Explain the concept of Programming ARM Microcontrollers using Assembly and Embedded C
- Design a Real Time Embedded Systems by interfacing Sensors and Actuators and porting Real time operating systems

List of topics:

- Introduction to Embedded Systems
- ARM Cortex processor
- Instruction Set Architecture
- LPC13 / 17xx Microcontroller
- Data Acquisition System: ADC, DAC
- Serial Communication: UART – I2C – SPI
- USB, CAN Bus
- Multitasking in Microcontrollers
- Designing a Digital Camera

Linux & Scripting languages

Module code: AES 615.1 Duration:72h

Objectives:

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

- Relate the Linux operating system in real world applications
- Name the different shell command interpreters, Operate Linux System and understanding of shell scripting features
- Write shell script programmatically using different features and debugging the code
- Write pattern matching using grep, sed, awk, perl commands
- Schedule the task using shell script
- Create an application using dialog utility
- Operate SED & AWK commands to do more complex task in easy way
- Generate a report using AWK commands
- Differentiate between globbing and pattern matching operators
- Create Make file
- Write PERL scripts that create and change scalar, array and hash variables
- Use control structures to branch or loop in PERL
- Read and write in a file using PERL file handle

* This course will help the students to understand the various tools available in Linux and be able to write shell scripts using sed, awk, grep commands, and how to apply them to the problem

List of topics:

- Shell scripting
- Dialog utility
- Power utilities like cut, paste, grep, tr, uniq
- Sed
- AWK
- PERL
- Make file

Linux Internals & Programming

Module code: AES 615.3 Duration: 72h

Objectives:

At the end of this module, the student will be able to:

- Gain an understanding about the Linux architecture and design principles of Linux operating system
- Familiarize to the concept of shell, shell programming, pipe, input and output redirection control structures, functions, debugging shell scripts, write shell scripts to automate the tasks
- Design and write application to manipulate internal kernel level Linux File System using file structure related system calls (file API's)
- Understand about process creation, scheduling, communication, and termination in the Linux environment
- Develop Inter Process Communication -API's that can be used to control various processes for synchronization
- Develop Network Programming that allows applications to that communicate over TCP/IP in the Linux environment
- Explore memory organization, virtual memory, memory mapping, and memory allocation mechanisms in Linux
- Concurrency within the kernel, understand the issues it can cause, and understand the various locking technologies (mutexes, spinlocks, atomic operations)
- Understand the principles of writing device drivers for Linux and integrating hardware with the kernel, Device probe and sw/hw configurations, event registration, communication
- Writing device drivers
- Writing custom Linux kernel

List of topics:

- Understanding Linux architecture
- Shell scripting
- File management
- System calls and APIs
- Process management
- Inter Process communication
- Linux Network Programming
- Memory management
- Shared resource management
- Device drivers

Process Dynamics and Control

Module code: AES 615.4 Duration: 72h

Objectives:

At the end of this module, the student will be able to:

- Develop mathematical models for first order and second order systems
- Develop the transfer functions for first order and second order systems such interacting and non- interacting systems
- Analyse the response of first order and second order systems for different disturbances
- Develop block diagram for feedback control system
- Discuss the various components in a feedback loop and their
- importance
- Understand the principles of feedback control, including PID (Proportional-Integral-Derivative) control and its applications in regulating dynamic processes
- Predict the dynamics of a closed feedback loop
- Apply Routh Stability Criterion for testing the stability of a control system
- Explain the importance of RHP zeros
- Construct Bode diagrams for simple systems and calculate gain margin and phase margin using Bode stability criterion
- Apply Ziegler- Nichol's technique and Cohen and Coon rules for controller tuning
- Explore advanced control strategies like Cascade control, Feedforward control, Ratio control, Dead time compensation using Smith predictor, Internal model control

List of topics:

- Introduction to dynamic systems – first order and second order
- Modelling of first & second order systems
- Time domain analysis
- Laplace transform and frequency domain analysis
- Feedback control system
- Transient response of closed loop system
- Frequency response analysis
- Advanced control strategies

Microcontroller & Its Application

Module code: AES 615.5 Duration: 72h

Objectives:

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

- Explain the architecture of Microcontrollers
- Explain the concepts of Communication protocols, Memory map, Interrupts and Exception handlers of Microcontrollers
- Employ the knowledge of Microcontrollers to build embedded systems
- Explain the concept of Programming Microcontrollers using Assembly and Embedded C
- Design Embedded Systems by interfacing Sensors and Actuators

List of topics:

- Introduction to Microprocessors & Microcontrollers
- ARM Microcontrollers
- Reset Circuitry, Relays and Timers
- Serial vs Parallel Buses
- Introduction to SPI and I2C Protocol, Interfacing with SPI and I2C Devices – RTC
- ADC and DAC

Internet of Things

Module code: AES 1809.2 Duration: 72h

Objectives:

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

- Explore the interconnection and integration of the physical world and the cyber space
- Design & develop IOT Devices
- Understand the application areas of IOT
- Realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
- Understand the building blocks & characteristics of Internet of Things

List of Topics:

- Internet of Things
  - Protocols
  - Logical Design
  - EnablingTechnologies
- Introduction to Python
  - Datatypes
  - Constructs
  - Packages
- Wireless Sensor Networks
  - Protocol Standards
  - Issues
  - Routing
  - Applications
- Protocols:
  - Bluetooth
  - Zigbee
  - Internet Protocol
- 6LoWPAN
  - 6LoWPAN architecture
- Socket Programming
- Databases & Web Programming

Minor Project 1

Module code: AES 695 **Duration: 36h**

Objectives:

At the end of the course student shall be able to:

- Search and identify the most relevant technical problem to be implemented
- Learn to gather related and relevant information related to the identified problem
- Design hardware/software, algorithms, flowchart, and block diagrams
- Learn to Analyze the results
- Justify the methodology used
- Develop the skill to write a technical report and paper

Seminar 1

Module code: AES 697 **Duration: 36h**

Objectives:

At the end of this module, the student will be able to:

- Search and identify a most relevant technical topic for presentation
- Learn to identify a current and relevant research topic
- Develop the skill to write a technical report
- Learn to design an effective technical presentation slides
- Improve overall presentation skills
- Develop the ability to work in groups to review and modify technical content

French Language 1

Module code: AES 637 **Duration: 60h**

Objectives:

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

- Listen (basic everyday situations)
- Read (basic everyday situations)
- Write (basic everyday situations)
- Speak (basic everyday situations)

SEMESTER TWO
ESIGELEC, FRANCE

Module Summary

SEMESTER 2 - ESIGELEC, FRANCE: FEBRUARY 2025 TO JULY 2025			
Course	**Module**	**ECTS**	**Duration (Hours)**
Embedded Systems	Communication Buses	3	30
	ADAS & Automotive Electronic Systems	3	46
	Safety Systems and Automotive Constraints	1	20
Embedded Software	Embedded C Programming	3	30
	Elective 3	3	30
Project Development & Management	R&D Project	5	60
	Project Management	2	26
Perception & Environment Understanding	Artificial Intlligence for Automotive	1	20
	Computer Vision	1	20
	Robotics & Localization	3	30
Communication & Language	Oral Communication	1	15
	MSTFRE French or MSTENG English	4	64
391 HOURS / 30 CREDITS			

List of Electives

ESIGELEC, France
Elective - 3
Module
LabVIEW Programming
VHDL Programming
Embedded Linux
EMC Automotive System

All modules are delivered face-to-face, on campus, with all required safety measures.

ESIGELEC PARTNER AWARD - AWARDED BY ESIGELEC

- Eligibility: Student with the highest academic score at the end of the programme

module description

Communication Buses

Module code: MSCAES01 **Duration: 30h**

Objectives:

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

- Use the most widely used communication busses in the field of embedded processors
- Understand technical specifications
- Design and implement bus-based communication architectures
- Understand and implement different bus systems like CAN, I2C, SPI, LIN, etc.
- Design communication programming for different board and protocol

List of topics:

- RS-485
- I2C BUS, SPI BUS
- CAN BUS
- ARINC bus

ADAS and Automotive Electronic Systems

Module Code: MSCAES02 **Duration: 46h**

Objectives:

At the end of this module, students will be:

- Able to design ADAS automotive system architecture
- Familiar with Driver Assistance System for Autonomous Vehicle
- Able to describe the EMC as a generic immunity and emission mechanisms of an electric/electronic vehicle
- Familiar with interaction traffic, vehicles and infrastructures

List of topics:

- ADAS Autonomous and Connected Driving:
  - Road safety
  - ADAS functions, Intellectual property and TRIZZ low
  - Lateral and longitudinal control
  - Autonomous driving, and Car2X
- ADAS Automotive Systems-based EMC:
  - Standards and regulations
  - EMC design, Mitigation techniques, Numerical simulation
  - Equipment validation, Vehicle validation, Future challenges
- Introduction to Highway Engineering and Traffic Analysis:
  - Vehicles and road infrastructures
  - Highway design
  - Introduction to traffic theory
  - Road transport system technologies
- Autonomous Vehicle:
  - Autonomous vehicle issues and how it works
  - Autonomous Driver (AD)
  - Sensors

Embedded C Programming

Module Code: MSCAES04 **Duration: 30h**

Objectives:

At the end of this module, students will be:

- Familiar with C coding practices for embedded systems
- Familiar with the parts and tools for embedded software validation
- Able to develop, write and test a C language program (as per design specifications) to be used with a microprocessor, in keeping with good practices like MISRA-C rules
- Able to analyse and enumerate the various phases of development for a software project: the V cycle
- Able to programme a microcontroller and develop embedded applications. These applications will deal with digital inputs/outputs, analog signals and will create delays and time events by means of a hardware timer
- Able to apply techniques and rules to ensure software quality and best coding practices (A sizeable part of the course is devoted to programming the microcontroller)

List of topics:

- Specificities of C Language for embedded systems (variables, memory organization, physical address access, etc.)
- Introduction to embedded system and programming methods
- Software analysis and validation tools and principles for embedded systems
- C language for embedded systems
- Best coding practices
- Programming the MSP430 microcontroller

LabVIEW Programming

Module Code: MSCAES11 **Duration: 30h**

Objectives:

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

- Use LabVIEW to create applications
- Understand front panels, block diagrams, and icons and connector panes
- Use built-in LabVIEW functions
- Create and save programs in LabVIEW so students can use them as subroutines
- Create applications that use plug-in DAQ devices. The application must respect standard LabVIEW practices (taken from the Certified LabVIEW Developer (CLD) test) and use a modular and evolving architecture
- 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

List of topics:

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

VHDL Programming

Module code: MSCAESxx Duration: 30h

Objectives:

At the end of this module, the student will be able to:

- Program logic devices (PLD)
- Develop programs using VHDL language

List of topics:

- Review of combinatory and sequential logic
- The different families of programmable logic devices
- Practice with synthesis tools (Xilinx or Altera targets, Quartus or ISE tools, Modelsim)

Embedded Linux

Module Code: MSCAES07 **Duration: 30h**

Objectives:

At the end of this module, students will:

- Be familiar with the uses of the Linux kernel for an embedded IT project
- Be familiar with principle software tools used in the Linux/Unix world and how to use them to develop
- Be able to write a device driver for specific Linux run material
- Be able to combine tools to create advanced functions with a minimum of programming

List of topics:

- Introduction to Linux
- How an OS fits in an embedded system
- History of Linux and Unix systems
- Linux compared to other embedded operating systems
- Fundamental tools: command lines, shell scripts
- Linux development tools
- C programming with embedded systems
- Linux drivers
- Web connections and Remote Administration Tools (RATs)

EMC Automotive System

Module Code: MSCAES06 **Duration: 30h**

Objectives:

At the end of this module, students will:

- Be familiar with EMC System architecture
- Be familiar with Integrity signal and how to calculate it
- Be familiar with EMC of components and how to protect electronic system
- Be familiar with near field and interactions with the environment

List of topics:

- EMC Integration
- Integrity Signal (IS)
- EMC of Components
- EMC Measurement tools:
  - Test facilities
  - Instrumentation
- EMC Tests on an Automotive equipment in reverberation chamber
- Near-field
- European requirements and associated tests

R&D Project

Module Code:MSCAESPRJ **Duration: 60h**

Objectives:

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

- Design, develop and realize an embedded system in mobile robotics and automotive systems
- Develop technical solutions - hardware and software
- Test the platform developed
- Develop and carry out an embedded system platform successfully and learn how to manage a technical project

List of topics:

- Project Management:
  - Benchmarking study
  - Technical and Functional specifications
  - Architecture Design and Risk analysis
  - Test protocol
- Technical Development:
  - Image processing and computer vision systems
  - Image segmentation
  - Pattern recognition
  - Object detection and tracking
  - Artificial Intelligence and Deep Learning Applications for mobile robotics and automotive
  - Dataset collection
  - Mobile robotics and autonomous navigation
  - IoT and sensors
  - Smart mobility

Project Management

Module Code: MSCAESPRMG **Duration: 26h**

Objectives:

At the end of this module, students will:

- Be familiar with the importance of project management, including formal methods, as a recognized discipline. They will also understand the complexities of different types of computing projects and methods to manage them
- Appreciate the need to break up complex projects
- Appreciate the need for effective planning, monitoring & control mechanisms
- Appreciate the need for formal project management organizational structures
- Appreciate the importance & management of stakeholders in an international project
- Be able to apply some of the skills and knowledge acquired, in any future project and, in particular, documentation for development project
- Appreciate the complexity of a technical project and the need for formal methods

List of topics:

- What is a project? The need for Project Management, formal methods
- Managing large, complex, international projects
- Un peu de franglais (Project Management culture and language in English and in 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
- Project Management 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 Project Management methods
- Cost-benefit analysis and project accounting may be touched upon, but are not in the scope of this course

Robotics and Localization

Module Code: MSCAES03 **Duration: 30h**

Objectives:

At the end of this module, students will be:

- Familiar with mobile robotic architecture
- Able to control a mobile robot like Wifibot
- Able to design and implement navigation algorithm on a mobile robot
- Able to design and implement a localization algorithm based on odometry
- Able to implement localisation of a robot in a known and / or unknown environment

List of topics:

- Introduction to mobile and autonomous robotics
- Control software architectures:
  - Case study: the ESIGELEC VIKINGS robot (TOTAL ARGOS challenge)
- Location based odometry:
  - Project: Implementation of a Wifibot robot based on odometry
- Development of different projects using Wifibot and which has as application:
  - Mobile robot
  - Environment perception and navigation
  - Localization
  - Autonomous navigation

Computer Vision

Module Code: MSCAESCV **Duration: 20h**

Objectives:

At the end of this course, the student will be able to :

- Develop and validate skills in computer vision and image processing
- Calibrate a camera
- Use an image processing software, like Open CV
- Carry out filters and segmentation
- Manage with embedded computer visión, through an applied project
- Manage interactions between sensors and a GPU board
- Interpret training/validation loss curves
- Apply transfer learning from pre-trained models on large datasets following a fine-tuning strategy.

List of topics:

- Computer vision basics :
  - Pinhole model,
  - Projective geometry,
  - Multiple view geometry,
  - Calibration,
  - Camera optics,
  - Sensors technologies.
- Applied computer vision :
  - OpenCV and Python,
  - Pixel operation (filtering, debayering, edge detection ...),
  - Segmentation (Background subtraction, colour segmentation, HOG),
- Embedded computer vision :
  - Sensors interfacing and configuration,
  - Computer vision project on Jetson embedded computer.

Artificial Intelligence for Automotive

Module Code:MSCAESAIA **Duration: 20h**

Objectives:

At the end of this course, the student will be able to:

- Design and develop MLP/CNN/RNN models for image / video and text analysis,
- Interpret training/validation loss curves ,
- Apply transfer learning from pre-trained models on largedatasets following a fine-tuning strategy.

List of topics:

- Brief introduction to machine learning applications,
- The perceptron training algorithm from scratch,
- The MLP (Multi-Layer Perceptron) algorithm and gradient back propagation from scratch,
- MLP design and development using Tensorflow and Keras for
- image analysis,
- Improving the MLP performance: activation functions, optimizers, batch normalization, dropout and loss,
- Deep learning :
  - CNN models,
  - RNN models for data sequence analysis (video and text).

Safety Systems & Automotive Contstraints

Module Code: MSCAES08 **Duration: 20h**

Objectives:

At the end of this module, students will:

- Be familiar with the role EMC phenomena play in the field of embedded systems, by studying automotive examples
- Be able to design and develop automotive embedded systems
- Be able to verify mechatronics and electromagnetic compatibility constraints in the development
- Be able to design a functional safety system

List of topics:

- EMC (Electromagnetic Compatibility) issues for electronics
- Cause and effect
- Prevention and solutions
- The automotive field: an overview

Oral Communication & Skills Presentation

Module Code: MSCAES10 **Duration: 15h**

Objectives:

At the end of this module, students will:

- Have a clear model of what constitutes successful and unsuccessful presentations
- Have practiced giving formal presentations in English
- Be more aware of their own shortcomings when presenting
- Practice and perfect final presentation skills
- Learn the importance of structure and how formal prepared speech differs from everyday social interactions
- Work with their presenting strengths and weaknesses via several short practice presentations and a final (individual and/or group) presentation

List of topics:

- Methods for creating a final presentation
- Practice

MSTFRE French or MSTENG English

Module Code: MSCAESLANG **Duration: 64h**

Objectives:

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

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

List of topics:

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

SEMESTER THREE INTERNSHIP

THE INTERNSHIP SEMESTER

The internship can be done either in a company or in a research laboratory, anywhere in the world. The duration of the internship is of 4 months (min.) to 6 months (max.). While ESIGELEC 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 sign the Internship Agreement. A copy of this agreement is retained by ESIGELEC, the company / research laboratory and the student. A faculty member of ESIGELEC will contact / visit the student once during his / her internship. This faculty member 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 and the oral presentation.

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 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.

MGCER

MUTHOOT GLOBAL CENTRE FOR
EDUCATION AND RESEARCH, INDIA

ESIGELEC

SCHOOL OF ENGINEERING
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