



MANIPAL

ACADEMY of HIGHER EDUCATION

(Deemed to be University under Section 3 of the UGC Act, 1956)

MANIPAL SCHOOL OF INFORMATION SCIENCES
MANIPAL ACADEMY OF HIGHER EDUCATION, INDIA

ESIGELEC 

SCHOOL OF ENGINEERING



SMART AND CONNECTED SYSTEMS

**POSTGRADUATE DUAL DEGREE
IN
AUTOMOTIVE EMBEDDED SYSTEMS**

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

Accredited by

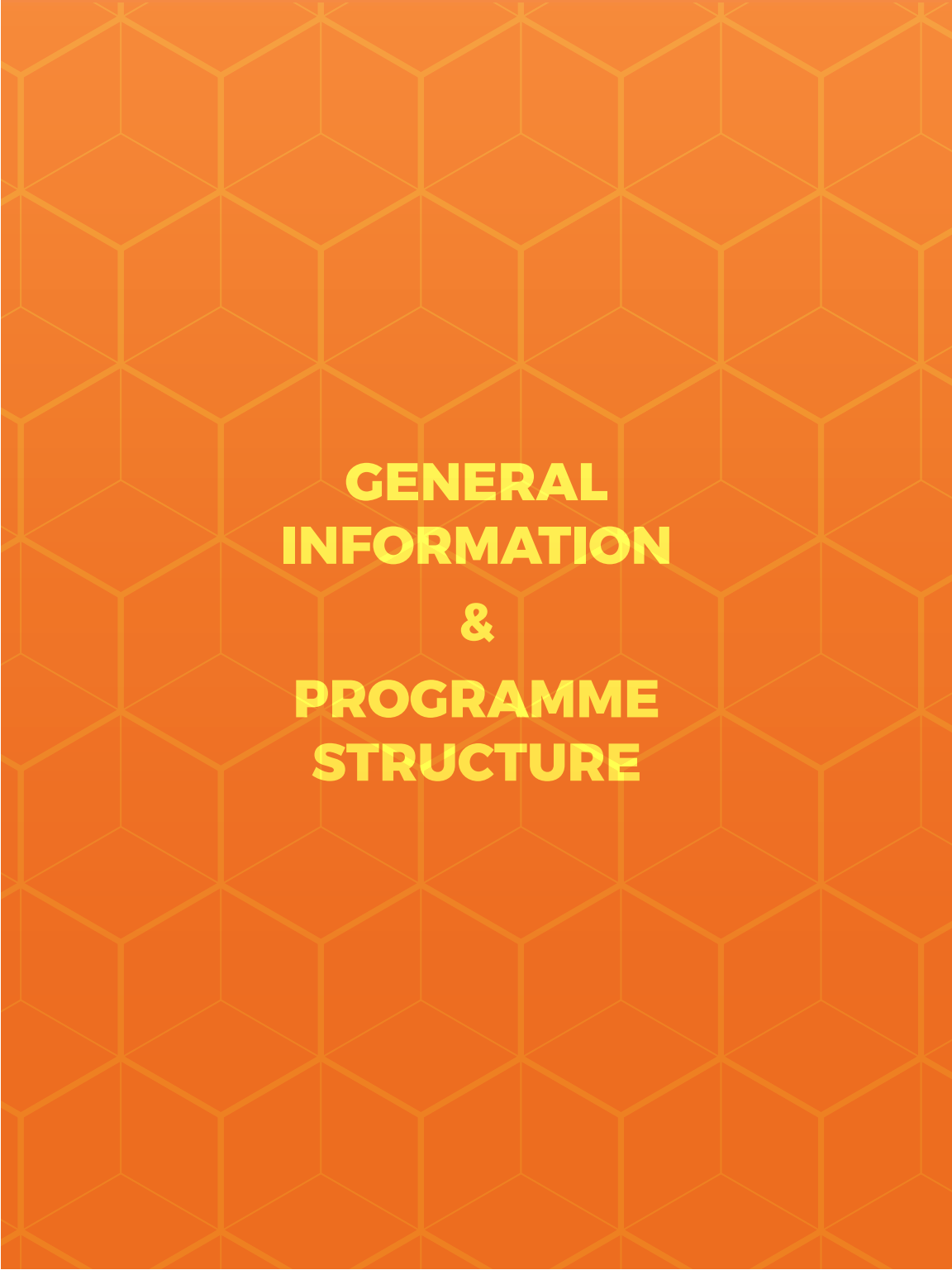


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Master of Engineering - ME (Automotive Embedded Systems)
Manipal Academy of Higher Education, India

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**GENERAL
INFORMATION
&
PROGRAMME
STRUCTURE**

GENERAL INFORMATION

ELIGIBILITY

A 4 year bachelor's degree in Electronics & Communication, Electrical & Electronics, Telecommunication, Computer Science or any other relevant branches in Engineering, with a minimum aggregate of 50%.

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 or for research. 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, consultants or researchers.

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

DURATION

- 3 Semesters for MSc. degree from ESIGELEC, France only
- 4 Semesters for MSc. degree from ESIGELEC, France & ME degree from MAHE, India

* The programme comprises two semesters of study, one semester each at MSIS-MAHE, India and one at ESIGELEC, France. In semesters 3 & 4, students are required to complete a mandatory internship in a company or in a laboratory (Ref. sections *semesters 3 & 4*).

The maximum permissible duration to complete the programme and obtain the degree(s):

- 3 years for the MSc. degree of ESIGELEC
- 4 years for the ME degree of MSIS-MAHE

PROGRAMME STRUCTURE

SEMESTER 1

Location: MANIPAL ACADEMY OF HIGHER EDUCATION – MANIPAL SCHOOL OF INFORMATION SCIENCES (MSIS-MAHE), India

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

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

Faculty: MSIS-MAHE

The rules and regulations for this semester are prescribed by MSIS-MAHE (approved by ESIGELEC).

SEMESTER 2

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 MSIS-MAHE).

SEMESTERS 3 & 4: 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.).

To earn a Master's degree from MSIS-MAHE in addition to the Master's degree from ESIGELEC, students must complete an internship of a minimum duration of 10 to 12 months in total, in semesters 3 & 4. (Ref. sections *semesters 3 & 4*)

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

SEMESTER ONE
MANIPAL SCHOOL
OF
INFORMATION SCIENCES
INDIA

Module Summary

SEMESTER 1 – MSIS-MAHE, MANIPAL, INDIA									
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 I*	5				3	100		100	
TOTAL	20		15	25					

* Audited and not considered for the calculation of GPA / CGPA for ME degree from MAHE

List of Electives

Manipal, India
Elective - 1
Module
Internet of Things
Microcontrollers and its Applications
Linux and Scripting Languages
Internet of Things Labs
Microcontrollers and its Applications Lab
Linux and Scripting Languages Lab

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, in keeping with possible changes in the health crisis or any other circumstances beyond our control and as advised by the relevant Indian Government authorities

For the students who choose to opt out of the Study Abroad – Credit Transfer Programme and continue Semester II at MSIS-MAHE, the exit policy is ME (Vehicular Embedded Systems)

GOLD MEDAL - AWARDED BY MAHE

- Awarded to the student with the highest CGPA
- Eligibility: Only graduates who have earned all credits required for the award of the degree from MAHE will be considered.

module description

Sensors and Transducers

Module Code: AES 651

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 653 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 661 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

Internet of Things

Module code: IOT 607

Duration: 72h

Objectives:

At the end of this module, the student 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 building blocks of Internet of Things and characteristics

List of topics:

- Internet of Things - Protocols - Logical Design - Enabling Technologies
- 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

Microcontroller & Its Application

Module code: AES 615.1 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

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

Minor Project 1

Module code: AES 695

Duration: 75h

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: 20h

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)

**rules & regulations,
evaluation**

RULES & REGULATIONS

Applicable to students admitted to the dual-degree programme offered by MSIS-MAHE, India & ESIGELEC, Rouen, France (August 2018 and later)

1. EDUCATIONAL PROCESS AT MAHE

1.1 CREDIT BASED SYSTEM

- 1.1.1 The educational process at MSIS-MAHE uses a credit-based system, wherein the module content is expressed in number of credits.
- 1.1.2 The content of individual modules – theory and practical – is expressed in terms of a certain number of credits. The number of credits assigned to a module, depends on the number of contact hours per week. Normally, in the case of theory modules, the number of credits is equal to the number of contact hours (lectures & tutorials) per week, while in the case of practical sessions, one credit is assigned for every three contact hours per week.
- 1.1.3 The content delivered in each semester, is expressed in terms of a specified number of credits. Students are deemed to have successfully completed a particular semester's programme of study, when they earn all the credits of that semester, i.e. they have not been awarded grade F, in any module in a given semester.
- 1.1.4 Students who earn the prescribed number of credits in all the modules of the programme, are deemed to have completed the requirements for graduation. This implies that students should obtain grade E or higher, in every module, of every semester, in order to be awarded the degree.
- 1.1.5 During the second year (semesters 3 & 4) of the programme, students are required to do an internship. The duration of the internship is of 10 months (min.) to 12 months (max.), from the date of commencement of the internship.

- 1.1.6** Students are required to do an internship of 10 to 12 months, in the second year of the programme (semesters 3 & 4), in one or more companies or laboratories, in any country.
- If an extension of internship beyond 12 months is required, they may do so by taking prior approval from the institution.
 - If a student gets a full-time job, before completion of the internship, he / she can join as an employee, provided:
 - The company/laboratory authorises him/her to present the work done as an internship. If not, the student will be required to do an additional project under the guidance of faculty at MSIS-MAHE, for the remaining period of the internship, during his / her free time.
 - If the work done prior to accepting full-time employment is satisfactory, the remaining duration of internship / project can be used to prepare the thesis for submission, upon prior approval from the guide at MSIS-MAHE. However, in this case, students will be allowed to submit the thesis, only after completing the internship.

1.2 OUTLINE OF EVALUATION

- 1.2.1** The progress of a student is assessed by means of a continuous evaluation process.
- 1.2.2** Theory modules are evaluated on a maximum of 100 marks: 50 marks for the in-semester assessment and 50 marks, for the end-semester examination.
- 1.2.3** Lab modules are evaluated on a maximum of 100 marks: 50 marks for the in-semester assessment and 50 marks, for the end-semester examination.
- 1.2.4** The Seminar and Mini-Project are evaluated internally, on a maximum of 100 marks.
- 1.2.5** The in-semester assessment is based on continuous evaluation, which includes assignments, case presentations, class tests, quizzes etc.

- 1.2.6** Students' performance is duly documented and announced (including on the notice board) within a week of assessment of the assignments, case presentations, etc.
- 1.2.7** A faculty committee headed by the Director, will address all grievances of students, with regard to their performance in tests / quizzes, practicals and end-semester examinations.
- 1.2.8** The overall performance of a student in each module, is expressed in terms of a Letter Grade for which the Relative Grading System is used.
- 1.2.9** Answer scripts of the end-semester exams for theory modules are evaluated by the faculty members who teach the modules.
- 1.2.10** Marks awarded in End Semester Theory Examinations of all the modules, will be displayed on the notice board by the faculty members concerned.
- 1.2.11** Paper seeing: Interested Students can approach the respective module faculty member, to see the marks awarded in the module. However, it is not mandatory.
- 1.2.12** Students who obtain grade F / I in a module(s), may appear for make-up exams.
- 1.2.13** Make up exams for Theory/ Lab modules will be conducted within a month of the End Semester Examination.
- 1.2.14** Students who obtain grade F / I in a make-up exam, will be eligible to re-appear for the said exam, only after ONE YEAR.
- 1.2.15** Students who do not register for the make-up exams, are eligible to appear for the said exams, only after ONE YEAR.
- 1.2.16** Marks scored in the in-semester evaluation and the end-semester examination, on a maximum of 100 marks, will be used to calculate and award the grade in each module.
- 1.2.17** The Class Committee (Ref. 5.2.2) will decide the credit cut-offs in each module and hand them over to the Director.

GPA and CGPA are calculated from semester 1 of the programme.

1.2.19

The internship at the end of the third semester, is evaluated on 25% of the total weightage allotted for the internship, by the internal faculty members (IA Mark), and the evaluation for the remaining 75 %, is conducted at the end of the fourth semester, by two examiners. The maximum marks for the internship is 400 and is based on a fixed grading system, as explained in 4.8.6.

2. THE CLASS COMMITTEE

A common Class Committee is constituted for all programmes. Teaching faculty of all the programmes are members of this committee and a senior faculty member is nominated as the Chairman, by the Director.

FUNCTIONS OF THE CLASS COMMITTEE

2.1

The Class Committee meets three times during a semester. The first meeting is held within two weeks from the date of commencement of the semester, during which the nature of the cycle of tests and broad outlines of assessment of the different tests and practicals (if any) are decided.

2.2

The second meeting is held two weeks after the first cycle of tests. During this meeting, ways and means to improve the effectiveness of the teaching-learning processes are discussed and the performance of the students is analysed.

2.3

The Chairman of the Class Committee sends the minutes of the class committee meeting to the Director, immediately after the first two class committee meetings.

2.4

The third meeting is held immediately after the end-semester exams and evaluation are completed. The marks obtained by the students, in all modules are reviewed, in order to analyze their performance and to decide their grade ranges in each module. The statement of grades is handed over to the Director thereafter, who in turn, publishes these results.

3. ATTENDANCE REQUIREMENTS

- 3.1** Under the relative grading system, a student must maintain an attendance record of at least 75% in every module. Attendance in the case of lectures, tests, practicals and tutorials are all taken into consideration, to calculate the attendance percentage.
- 3.2** Students who fail to meet the minimum attendance requirement, will not be eligible to appear for the end-semester examination and subsequent grading in any of the modules of that semester.
- 3.3** There is no minimum attendance requirement during the period of the internship, for MSIS-MAHE.

4. PROMOTION TO HIGHER SEMESTER-ACADEMIC PERFORMANCE REQUIREMENTS

- 4.1** To be promoted from one semester to a higher semester, students must fulfil the minimum attendance requirement as in 4.4.1 and all other relevant academic requirements.
- 4.2** MAHE follows a carry over system for the academic requirements:
- 4.2.1** Students are given a maximum of four years to clear the academic requirements of a module, which in effect, translates to double the actual duration of the programme. Students who fail to complete a module within this duration, will not be eligible for the award of the MAHE Degree.
- 4.2.2** Students may start the internship at the beginning of the third semester, but must earn all the credits of the first and second semesters, before submitting the final presentation, to obtain the ME degree from MAHE. Further, they must complete the programme within the maximum period stipulated, for the award of the degree.

5. EVALUATION PROCEDURE

5.1 SEMESTER EVALUATION

- 5.1.1** A system of continuous assessment and end-semester exams, both internal, are used to monitor the progress of the students, in all modules, whether they are theoretical or practical.
- 5.1.2** Students are evaluated on various criteria: class / tutorial participation, assignment work, lab work, class tests, mid-term tests, quizzes, and end-semester examinations. All this contributes to the final grade awarded for the module.
- 5.1.3** The evaluation methods and weightage given to the different assignments and activities, are explained to the students at the start of the semester.
- 5.1.4** In-semester evaluation or Internal Assessment (IA mark) in each module, for 50 marks, includes the performance in class / tutorial participation, assignment work, lab work, class tests, mid-term tests, quizzes, etc.
- 5.1.5** End-semester examination is conducted for a maximum of 100 and is then scaled down to 50.
- 5.1.6** The end-semester marks on a maximum of 50 and the IA marks on a maximum of 50, are added, and these marks, on a maximum of 100, are used to calculate the grade, in a module.
- 5.1.7** The end-semester examination is conducted at the end of a semester for all the regular modules.
- 5.1.8** Students who earn grade F / I in the module(s) in the end-semester exam, may re-appear for the make-up exam.
- 5.1.9** The make-up exam for Theory / Lab modules will be conducted within a month, for students who earn grade F / I in the End Semester Examination.

5.1.10 Students who earn grade F / I in the make-up exam, will be eligible to re-appear for the regular module(s) exam only after ONE YEAR.

Students who earn grade F / I in the end semester examination and clear the module in the make-up examination (without re-registration) will get a maximum grade of C.

5.2. RELATIVE GRADING

5.2.1 Marks obtained in the relative performance / grading system, are considered to calculate the letter grade for all modules.

5.2.2 The Class Committee decides the grade cut-off in each module, which is then communicated to the Director.

5.2.3 The Director will in turn declare the results, based on the grade cut-offs.

5.2.4 GPA and CGPA are calculated from semester 1 of the programme.

5.2.5 Students who fail to score a minimum of 35% in the end-semester exams and 50% aggregate in each module (theory or lab) are considered failed.

5.3 LETTER GRADING SYSTEM

The final evaluation of a module is carried out on a ten-point grading system, as explained below:

PERFORMANCE GRADE

Grade Points	10	9	8	7	6	5	0
Grade	A+	A	B	C	D	E	F

5.3.1 Students who earn a minimum of 5 grade points (grade E) in a module, are deemed to have successfully completed that module.

5.3.2 Students must appear for the end-semester examination of the prescribed module of study (appearing only for the continuous assessment tests is not sufficient) to be eligible for the award of the grade in that module.

- 5.3.3** Students who are eligible, but fail to appear for the end-semester examination, are awarded grade I (incomplete) on the grade report card. For all practical purposes, grade I is treated as grade F.
- 5.3.4** Students who earn grade F / I in a module and clear the module in the subsequent examination, without re-registration, will earn a maximum grade of C.

5.4 GRADE POINT AVERAGE, (GPA) AND CUMULATIVE GRADE POINT AVERAGE (CGPA)

Each module grade is converted into a specific number of points associated with the grade. These points are weighted in accordance with the number of credits assigned to a module. The grade point average for each semester will be calculated only for those students who have passed all the modules of that semester. The weighted average of GPA's of all semesters that the student has completed at any point of time is the cumulative grade point average (CGPA) at that point of time.

CGPA up to any semester will be calculated only for those students who have passed all the modules up to that semester.

Calculation of GPA and CGPA:

Modules	Credits	Letter Grade	Grade Value	Credit Value	Grade Points
Mathematics	3	C	7	3x7	21
Chemistry	3	B	8	3x8	24
Physics	3	A	9	3x9	27
English	2	B	8	2x8	16

TOTAL CREDITS

11

TOTAL GRADE POINTS

88

In this case GPA = Total Grade Points / Credits = 88 / 11 = 8

Suppose the GPA in two successive semesters is 7.0 and 8.0 with 26 and 24 respective credits in those semesters, then the

CGPA = (7.0 x 26 + 8.0x24) / (26 + 24) = 374 / 50 = 7.48

$$\text{Generally, } \sum_{i=1}^n C_i G_i$$

$$\text{GPA} = \frac{\sum_{i=1}^n C_i G_i}{\sum_{i=1}^n C_i} \quad \text{CGPA} = \frac{\sum_{j=1}^N (GPA_j * \sum C_i)_j}{\sum_{j=1}^N (\sum C_i)_j}$$

Where

n = Number of modules

C_i = Number of credits of ith module

N = Number of semesters

G_i = Grade of the ith module

After the results are declared, all students who have appeared for the exams will receive a grade report card, carrying a list of modules of that semester, the grades, the GPA and the CGPA.

5.5 RE-REGISTRATION

5.5.1 Students who do not fulfil the attendance requirements of a module(s) and who are detained, will not be allowed to appear for the examinations, and can re-register for the module(s) concerned, (in the semester in which those modules are offered) by paying the prescribed fees.

5.5.2 Students who wish to improve their GPA in a semester, may re-register for all the modules of that semester by paying the prescribed fees. Students must attend classes, write the tests, assignments and appear for end-semester examinations of all the modules of that semester, for which they have re-registered to improve their GPA. The attendance percentage, the IA marks and the new GPA obtained will replace the old records and render them null and void. Moreover, in such cases, students must also surrender their previous grade report card, along with the re-registration application.

5.5.3 Students may re-register to improve their GPA of a semester, within 15 days from the date of announcement of the result.

5.5.4 Students may re-register for one or more modules offered in the current semester (both Theory and Labs) within 15 days from the date of announcement of the result for internal assessment improvement, after paying the prescribed fees, if they have obtained grade F/ I. They may attend classes in the next available semester, in which the module is taught and will be required to submit assignments, appear for sessional tests and the end-semester examination. The new grade earned will replace the previous one. However re-registration will be allowed only with prior permission of the Director.

Note:

- Grade I is equivalent to F grade, except if a student is unable to take the exam for a genuine reason (ex: health related problems)
- If a student earns a grade other than F (A, B, C, D or E), he/she cannot seek to improve upon them.

6. REQUIREMENTS FOR GRADUATION

A student is deemed to have completed the requirements for graduation if he / she has:

- 6.1 Fulfilled all minimum requirements in the prescribed modules of study and earned the number of credits specified in the programme of study.
- 6.2 Adhered to all rules of evaluation.
- 6.3 Satisfied the requirements specified by the Institution, if any.
- 6.4 Cleared all dues.
- 6.5 No case of indiscipline pending against him/her.

7. DECLARATION OF RESULTS

- 7.1 After the end-semester evaluation, marks secured on a maximum of 100 marks (50 for internal evaluation and 50 for end term evaluation) by all the students are compiled module-wise.
- 7.2 The academic committee, comprising the academic coordinator and senior faculty members of MSIS-MAHE, decides the cut off marks and the grades in each module, based on the credit system guidelines.
- 7.3 The academic committee will send the grades along with the marks to the Director, who in turn declares the results.
- 7.4 A student is given grade F if he / she fails to score a minimum of 50% in the end-semester examination.

- 7.5 The internship in the second year (third & fourth semesters) use the following fixed grading system.

Grade	Range
A+	90% - 100%
A	80% - 89.99%
B	70% - 79.99%
C	60% - 69.99%
D	50% - 59.99%
E	40% - 49.99%
F	< 40%

- 7.6 In keeping with the guidelines of MAHE, credits earned from the partner university / institutions are considered for the award of the degree but not for the calculation of GPA / CGPA. Therefore, MAHE will issue a certificate for the credits earned from the partner university, but not a Grade Report for the said credits.

8. AWARD OF DEGREE

- 8.1 Students who successfully complete the programme by earning required number of credits, within the stipulated maximum duration of the programme are awarded the degree with CGPA.

Number of credits to be earned for the award of Master of Engineering - ME programme: 75

9. ELIGIBILITY FOR THE MAHE GOLD MEDAL

Graduates who have earned all the credits required for the award of the degree from MAHE and scored highest CGPA.

*The rules and regulations explained in this document, are subject to change without prior notice.



SEMESTER TWO
ESIGELEC, FRANCE

Module Summary

SEMESTER 2 - ESIGELEC, FRANCE				
Course	Module	ECTS	Duration (Hours)	
Automotive Systems	Communication Buses	3	15h(Crs) + 15h(TP)	
	ADAS & Automotive Electronic Systems	3	23h(Crs) + 23h(TP)	
	Robotics & Localization	3	15h(Crs) + 15h(TP)	
Embedded Software	Embedded C Programming	3	15h(Crs) + 15h(TP)	
	Elective 2	3	15h(Crs) + 15h(TP)	
Project	Project	4	100h(TP)	
	Project Management	3	26h(Crs)	
	Safety Systems & Automotive Constraints	2	25h(Crs)	
Language	Bibliographical Studies	2	15h(Crs)	
	Oral Communication	1	14h(Crs)	
	French Language 2*	3	64h(Crs)	
410 HOURS / 30 CREDITS				

List of Electives

ESIGELEC, France
Elective - 2
Module
LabVIEW Programming
VHDL programming
Embedded Linux
EMC Automotive System
Biomedical Imaging and Signal Processing

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, in keeping with possible changes in the health crisis or any other circumstances beyond our control and as advised by the relevant French Government authorities

ESIGELEC PARTNER AWARD - AWARDED BY ESIGELEC

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

module description

Semester 2: ESIGELEC, FRANCE

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

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

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: MSCAES12

Duration: 30h

Objectives:

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

- Program logic devices (PLD) and develop programs using VHDL language
- Design Finite State Machines (FSMs) in VHDL.
- Use the Xilinx ISIM simulator
- Synthesize a VHDL design and program the resulting bitstream in a FPGA
- Understand the different design flows for the design, verification and test of logic designs using VHDL as the design language and a FPGA as the final target device

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)

Biomedical Imaging & Biomedical Signal Processing

Module Code: MSCAES05

Duration: 30h

Objectives:

At the end of this module, students will be:

- Familiar with medical images used in clinics and hospitals, including a description of physical phenomena

List of topics:

- Image processing and signal analysis
- Introduction of Fourier transforms features of medical images within Matlab introduction
- Ultrasound images basic theory of acoustic waves reflection and transmission, ultrasonic arrays, formation of images in B mode, other techniques of ultrasonic imaging:
 - Doppler
 - Agents of contrast
 - Elastography
- X-ray images, radiography images and computed tomography
- Magnetic resonance images

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

Project

Module Code:MSCAESPRJ

Duration: 100h

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 français (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

Safety Systems & Automotive Constraints

Module Code: MSCAES08

Duration: 25h

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

Bibliographical Studies

Module Code: MSCAES09

Duration: 15h

Objectives:

At the end of this module, students will be familiar with:

- State of the art technologies relate to the autonomous vehicle:
 - Mobile robotics, sensors, deep learning applications
 - Mobile robot localization
- Issues related to testing and validation of autonomous vehicles
- How to conduct a presentation on a technical subject, given at the beginning of the semester
- How to acquire basic skills and methods about information searching and final presentations
- Information searching and final presentation

List of topics:

- Team working
- Information searching
- Final presentation

Oral Communication

Module Code: MSCAES10

Duration: 14h

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

French Language 2

Module Code: MSCAESLANG

Duration: 64h

Objectives:

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

- Understand standard French used in everyday situations at work, school, etc. (Oral comprehension)
- Understand texts written in standard French 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)

**rules & regulations,
evaluation**

Each academic semester at ESIGELEC carries a total of 30 ECTS credits. The internship, professional thesis and final presentation also carry a total of 30 ECTS credits. A student must obtain a minimum score of 10/20 in each module to be awarded the allocated ECTS credits of the module.

The Master's Degree of ESIGELEC is awarded, if the student has obtained a minimum average score of 10/20 in each module, thereby obtaining the total number of 90 ECTS credits.

The jury of ESIGELEC for the Master's Degree comprises the President, faculty members and representatives of the managing staff of ESIGELEC. This jury, nominated by the General Director of ESIGELEC, convenes up to a maximum of four times per year, i.e. April, July, September and December (dates will be communicated at an appropriate time). The MSc. in Automotive Embedded Systems awarded by ESIGELEC, is accredited by the CGE (Conference des Grandes Écoles).

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

SCORES & ECTS CREDITS (EUROPEAN CREDIT TRANSFER SYSTEM)

- The Master's Programme is divided into several modules, each of which 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 final overall score of the student is the result of the weighted averages of all modules of the Master's Programme.
- The total number of ECTS credits of the Master's Programme is equal to the total of all the ECTS credits of its modules.
- One ECTS credit corresponds to about 25 hours of coursework (lectures, tutorials, projects, practical work, evaluation, individual work outside of class hours).

- A statement of marks is sent to the students at the end of each academic semester and also after they are evaluated by the Jury of ESIGELEC.

RETAKING EXAMS

If a student has obtained less than 10/20 in one or more modules, in academic semester 2 at ESIGELEC, he / she will be required to retake an exam in each of these modules, as advised by the Academic Coordinator of the Master's Programme of ESIGELEC (even if the final overall score of the student in the Master's Programme is greater than 10/20).

Students who fail a module may appear for retake exams OR term-end exams with subsequent batches at ESIGELEC, within a 2-year period from the date of completion of the academic semester at ESIGELEC.

*In some cases, ESIGELEC may consider other alternatives, including conducting the exams at its representative offices abroad (China and India).

In case a student fails to obtain 30 ECTS credits in the third semester (i.e. the internship), the Academic Coordinator for the programme at ESIGELEC may prescribe one of the following at his / her discretion:

1. A fresh internship, which would include a new report and a new final presentation; or
2. Redoing the report and final presentation; or
3. Deny the student another attempt at the internship, if the student is found guilty of any fraudulent activity during the internship.

The score(s) obtained from exam(s) retaken replace the previous score(s) obtained by the student in the module(s) concerned.

If the student does not retake an exam as advised by the Academic Coordinator of the programme at ESIGELEC, and if no valid explanation is provided for the absence, he / she will be marked 0/20 for the module concerned.

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

FRAUD & CHEATING

Students indulging in fraudulent practices or cheating during an exam / final presentation / project / practical work / internship report will be marked 0/20 for that piece of course work, evaluation exercise, report or exam. Examples of plagiarism, fraud or cheating, include, but are not limited to:

- Duplication of another student's work during a written assignment / exam.
- Use of a reference document or calculator not authorized by the faculty member during an evaluation exercise.
- Plagiarism (>20%) of reports, presentations, or computing programmes, obtained by any means (book, magazine, other students, electronic files, Internet, work previously submitted in another course).

ATTENDANCE POLICY

All lectures, tutorials, practical work, projects, conferences and seminars are mandatory. Attendance will be monitored by the faculty members at the beginning of each class and the attendance sheet will be maintained by the Studies Office of ESIGELEC.

LATE ENTRY INTO CLASS

If a student is late by 10 or more minutes, he/she will be refused entry into the classroom and the faculty member will make a note in the attendance register. Such cases will be considered as unjustified absence. If a student is late less than 10 minutes, he / she will be accepted into the classroom and the faculty will make a note in the attendance register.

- 3 late entries of less than 10 minutes will be considered as 1 case of unjustified absence.

ABSENCE FROM CLASS

A student who is absent for medical reasons must submit a medical certificate within 3 working days, in order for the absence to be excused. Leave letters in the case of other accepted anticipated absences must be signed at least 3 days prior to the absence, by the Academic Coordinator of the Master's Programme, in order for the absence to be excused. No other justifications of absence will be excused by ESIGELEC.

PENALTY

Students will receive an oral warning after 5 occurrences (unjustified absence). A stern oral warning will be given after 10 instances. 20 such cases may lead to the student's dismissal from ESIGELEC.

ABSENCE FROM EXAMINATION

Only students whose absence from an examination has been excused, will be allowed to re-take the supplementary examination, in the month of July. Students whose absence from an examination has not been excused will be marked 0/20 in the said examination and will not be authorized to retake the supplementary examination.

visa
residence permit
enrolled student status

Most international students may need to get a French student visa before entering French territory. Please contact the Consulate of France or the Embassy of France in your country for precise information.

ESIGELEC offers international students a single-window, dedicated service, within the campus, where information and assistance is provided for visa-related questions.

VLS-TS STUDENT VISA, LONG STAY VISA VALID AS RESIDENCE PERMIT FOR STUDENTS

The VLS-TS student visa allows you to pursue studies in France, for a period of four months to one year. This must be validated upon your arrival in France (or at the port of entry, if it is a Schengen country). It entitles the holder to:

- travel freely in all the countries of the Schengen Area, for a continuous period of 90 days maximum, per visit
- work 964 hours per academic year, i.e. 20 hours per week, to supplement their financial resources
- extend their stay beyond the period of validity of the residence permit already issued and within the duration of the study period

THE MULTIPLE-ENTRY VLS-TS STUDENT VISA

Holders of a multiple-entry VLS-TS student visa (VLS-TS "étudiant" - MULT - à entrées multiples) are entitled to travel outside of France during the validity period of this visa. However, your visa must be validated upon your arrival in France, within the first two months of your date of entry into the country. Failure to complete this process within the said time, may entail re-applying for a fresh visa to enter French territory or payment of a fine.

TO VALIDATE THE VLS-TS STUDENT VISA

You can validate your VLS-TS student visa online, within two months of arriving in France or in a Schengen country, at the latest, on:

<https://administration-etrangers-en-france.interieur.gouv.fr>

You will receive a PDF document approving your Residence Permit. This PDF and the VLS-TS student visa together, comprise the Residence Permit. You are therefore expected to retain this document safely.

CHECKLIST TO VALIDATE THE VLS-TS STUDENT VISA ONLINE

- a valid email address
- personal details on your visa / passport
- date of arrival in France or in Schengen area, as stamped in passport
- residence address in France
- bank card to pay requisite fee online

RENEWING THE STUDENT RESIDENCE PERMIT

If the period of your study programme is longer than the duration of your VLS-TS student visa, you may renew it at the prefecture, three months prior to the expiry of your current visa. You will need to apply for an extension of your student residence permit (carte de séjour).

PRE-REQUISITES TO APPLY FOR RENEWAL

To renew your residence permit, you must be enrolled in a French institution of higher education and be residing on French territory. The following are the documents you will need:

- passport with residence permit
- birth certificate including the names of parents
- proof of enrolment at the institution
- academic records of the last three years and of the study programme you are currently pursuing (mark sheets and degree certificates)
- proof of financial resources (bank statements reflecting a transfer of 615€ every month)
- proof of address dated within the last 3 months (e.g. electricity bill / proof of stay in student residence / accommodation insurance certificate)
- health insurance
- 3 passport-size photographs.

AFTER YOU HAVE APPLIED FOR RENEWAL

The prefecture may issue a *récépissé*, or acknowledgement. This document certifies that you have applied for the renewal and it allows you to stay in France, for 3 to 6 months after your residence permit expires. You will receive a submission receipt, when you hand over the complete file to the department concerned, at ESIGELEC. This receipt is an equivalent of the *récépissé*.

*Not all prefectures issue this document.

When you apply for the renewal for the first time, the acknowledgement *récépissé* will be valid for a duration of four to six months, does not allow you to travel outside of France during this time. If you apply for a renewal thereafter, you can travel freely outside of France and return with the acknowledgement (without having to apply for another visa).

Visas, residence permits and renewals are granted at the sole discretion of the competent authorities and are not within the purview of ESIGELEC. ESIGELEC cannot be held responsible for refusals.

Visa / Residence permit related information is subject to change without prior notice.

THE ENROLLED STUDENT STATUS AT ESIGELEC

- After completion of the last academic semester in France in year N, students will retain the Enrolled Student Status, till they graduate from ESIGELEC, and for a maximum period of two years, after completion of the academic semester and subject to the conditions mentioned below.
- If, at the end of N / N+1:
 - Students have started but not finished the internship for the MSc. of ESIGELEC, the Enrolled Student Status of ESIGELEC is renewed automatically for one academic year, i.e. N+1 / N+2. This is the only instance that will not entail payment of additional fees.
 - Students have not started the internship for the MSc. of ESIGELEC, they will have to renew their Enrolled Student Status for the next academic year N+1 / N+2, by paying the applicable fees. This is the last renewal that will be accepted for the Enrolled Student Status of ESIGELEC. Failure to pay the said fees, will result in the Master's degree of ESIGELEC not being awarded.
- The Enrolled Student Status of ESIGELEC, ceases to have effect immediately and permanently, after students have graduated with the MSc. degree. For the ME degree from MAHE, requiring an additional internship (or to extend the internship for a period of more than six months) with the Student Status, must do so on the basis of an agreement signed between MSIS-MAHE, the company offering the internship and the student.

SEMESTER THREE
INTERNSHIP
(FOR MSc. DEGREE FROM ESIGELEC)

SEMESTER 3		
Module Name	Credits	Duration
Internship in a laboratory or in industry	30	4-6 months

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.).

Steps to be followed, once students have received an internship offer:

- Fill an internship form and submit it to the Placement Office at ESIGELEC for approval.
- The Academic Coordinator of the Master's Programme and the Placement Office of ESIGELEC will review the offer of internship and approve it, if it meets all requirements.
- 3 copies of the Internship Agreement will be signed by ESIGELEC, the company / research laboratory and the student and each party will retain a copy.

During the internship:

- A faculty member of ESIGELEC will be in touch with the student to supervise the progress.
- The topic of the professional thesis must be communicated to the Academic Coordinator of the Master's Programme of ESIGELEC for approval within the first month of starting the internship.

After completion of the internship:

- The professional thesis (2 hard copies by post and 1 soft copy in Word or pdf via intranet) must be submitted to ESIGELEC, at least 3 weeks before the final presentation.
- The final presentation must be done within four months, at the latest, of completion of the internship for the MSc. of ESIGELEC:
 - Location – ESIGELEC (or remotely, upon special written request.
 - Duration - 60 minutes (30 min. presentation + 15 min. Q&A + 10 min. deliberation among jury members + 5 min. feedback to the student)
 - Calendar – March, June, September, November (exact dates will be communicated at an appropriate time)

* Assistance will be provided to find internships but students are expected to play an active part, as the internships are not offered automatically by ESIGELEC.

* For internship related questions, students may contact either the assigned faculty member or the Academic Coordinator of the Master's Programme of ESIGELEC.

* Students have a maximum of 2 years, after the final academic semester, to finish the internship and complete the steps mentioned above, for the MSc. of ESIGELEC.

The final presentation will be done before a jury comprising 2 teachers from ESIGELEC and a president from ESIGELEC.

The final presentation will have to take place at ESIGELEC in France (if required, representatives of MSIS-MAHE may also be part of the jury remotely). The marks obtained for this internship will be communicated to MSIS-MAHE.

SEMESTER FOUR
INTERNSHIP
(FOR ME DEGREE FROM MAHE)

SEMESTERS 3 & 4: FOR ME DEGREE FROM MAHE, MANIPAL, INDIA

Module Name	Credits	Duration
Internship in a laboratory or in industry	25	10-12 months

To earn an ME degree from MAHE, in addition to the MSc. degree from ESIGELEC, students must complete an internship of a duration of 10 months (min.) to 12 months (max.), for which they have two options:

1. Do a second internship in semester 4, outside of France*. In the case of this second internship:
 - The agreement is signed between MSIS-MAHE, the company/lab and the student.
 - MSIS-MAHE will supervise the progress of this internship.
 - The final presentation will be done before two faculty members and a president from MSIS-MAHE.
2. Do a single internship of a duration of 10 months (min.) to 12 months (max.), outside of France* and for which:
 - The agreement is signed between MSIS-MAHE, the company/lab and the student.
 - MSIS-MAHE and ESIGELEC will supervise the progress of this internship.
 - The mid-semester report (after four months of the start of the internship) must be submitted to ESIGELEC, this will be supplemented with a mandatory oral presentation before a jury of ESIGELEC to obtain the MSc. degree.
 - The report and the presentation mentioned above, along with a final report and presentation at the end of the internship, will be required for the ME degree from MAHE.

* French regulations do not permit internships of a duration of more than 6 months.

board of studies
ESIGELEC & MAHE

The Board of Studies of ESIGELEC and MSIS-MAHE review the content, the architecture, the teaching methodologies and modalities of the programme periodically, with a view to retain its relevance, in keeping with industry requirements. The Board meets once a year.

The Board of Studies is jointly presided over by ESIGELEC and MSIS-MAHE and comprises representatives of both institutions and related industries.

Periodic reviews are conducted by the academic coordinator and faculty members at ESIGELEC. Modifications are made as and when necessary, to improve the content of the programme. Other grievances are also addressed from time to time. Similar meetings take place between counterparts at MSIS-MAHE and the academic coordinator at MSIS-MAHE.

The academic coordinator at ESIGELEC meets with the students at least once a month, to address any concerns they may have, academic or otherwise. Similar meetings take place with the academic coordinator at MSIS-MAHE.

The academic coordinators at ESIGELEC and MSIS-MAHE remain in touch throughout the programme.



MANIPAL
ACADEMY of HIGHER EDUCATION

(Deemed to be University under Section 3 of the UGC Act, 1956)

MANIPAL SCHOOL OF INFORMATION SCIENCES
MANIPAL ACADEMY OF HIGHER EDUCATION, INDIA

ESIGELEC 
SCHOOL OF ENGINEERING


SMART AND CONNECTED SYSTEMS