

Department of Engineering

ENGINEERING STUDENT HANDBOOK

CONCENTRATION

Environmental Engineering

Materials Science and Engineering

Letter from the Director of the Department of Engineering

Welcome to the Department of Engineering of the College of Physical and Natural Sciences
of the University of the French West Indies!

Getting an engineering degree at the University of the French West Indies (UA) is finally possible! With the unfailing support of Région Guadeloupe, business leaders in the Caribbean/Americas/Europe, our highly motivated faculty and our internationally recognized research laboratories, the UA offers two degrees in engineering: Environmental Engineering - Concentration in Materials Science and Engineering (since September 2012) and Energy Systems Engineering (since 2013). These two degree programs are the only engineering programs in the Americas accredited by the Commission des Titres d'Ingénieurs (CTI)¹, a measure of excellence for our rigorous academics.

It is difficult to describe what an engineer does in just a few sentences since the job includes many functions and will evolve throughout an engineer's career. Thus, students considering a career in engineering may only have a vague idea of what being an engineer entails and what their day-to-day functions will be. Being an engineer requires four main qualities: A strong work ethic, the ability to work independently, competence in leading projects and a solid capacity to adapt. Engineering students strengthen their work ethic over the course of the program since academic excellence requires dedicated and organized work and study habits. They learn to work independently and lead their own projects with a solid foundation of knowledge plus practical experience gained through senior design projects, multi-technological projects and yearly internships. Students learn that being able to adapt is an important quality that lets them meet head on the scientific and economic changes of tomorrow. Internships abroad help our students to develop their ability to adapt to new situations. We note also that the appetite for engineers to start their own companies is a distinguishing feature of the new landscape (IESF survey, 2015). Our engineering programs prepare students for this new terrain by giving them the tools to succeed as entrepreneurs and to become future leaders. To do this, we created curriculums that pair our engineering courses with courses in management, economics, and law, and also by providing support to student entrepreneurship.

Our engineering programs seek to prepare future engineers to contend with and to resolve the great industrial, ecological and energy challenges brought on by dwindling natural resources and climate change. These challenges take on an even greater importance in our island and tropical territories, which lack natural sources of fossil fuels. We can, however, transform these supposed disadvantages into strengths. We can create the power grid of tomorrow, a grid that integrates renewable energy sources into its fundamental design. We can invent new materials from unconventional sources such as those produced by the circular economy (waste re-use and recycling) or by green chemistry (ecologically sustainable materials, agro-materials). Our two concentrations—Materials Science and Engineering and Energy Systems Engineering—train engineers capable of meeting future technological challenges while addressing our territories' sustainable

¹ Commission des Titres d'Ingénieurs (CTI), an independent accreditation body for higher education in engineering, based in France.

development needs. This is why the knowledge and skills taught in our curriculum are defined and adjusted by a business-education committee composed of professors, professional engineers and business leaders. The committee's purpose is to ensure that what is being studied in our classrooms matches what is needed in the real world in order to maximize our student's employment prospects. Students also gain professional skills through seminars or internships headed by industry professionals. This instruction comprises 20% of teaching. The sponsors of our first two graduating classes, EDF-Archipel Guadeloupe and Lafarge, represent two of the most important industries in our territories, demonstrating the relevance of our program's curriculum.

Our territories are at the crossroads of the Americas, the Caribbean and Europe, and benefit from cultural, economic and social diversity. Our engineering program embraces this diversity in its study body and strives to prepare every graduate for entering the workforce of today. Engineering students have ample opportunity to learn with and learn from scholars and professors from around the world, through student exchange and visiting professor programs, and internships abroad in the Caribbean, Americas and Europe.

We need to nurture the next generation, by providing young people with solid education and training anchored in their geographic, economic and scientific environment, and by ensuring they can confront the revolutions facing our world. Our two engineering degree programs are perfectly suited to meeting these needs.

Build the Future. Become an Engineer!

Laurence Romana

Letter from the Director of the Engineering Program Materials Science and Engineering Concentration

The French law on energy transition for green growth promotes efficient use of raw materials, reduction of waste at the source, and development of the circular economy. The law encourages the design of innovative products and materials, better waste management and recycling, energy efficient building design and construction through the use of new materials, among other strategies. This law integrates professional training in sustainable construction and renovation under the 2015-2017 Feebat agreement, which was signed between the French government and the building industry.

At the local level, the new RTAA regulations² affecting construction of new homes and RTG regulation³ will support full development of eco-friendly construction. These regulations seek to promote the design and application of alternative building methods in the tropical environment, including the manufacture of innovative materials, and a “tropicalization” of expertise (2013 Synergile Report, produced by technopolis). The objective is to produce innovative insulation suitable for local conditions, perhaps produced from the conversion of waste materials, and to take into consideration local geo-climatic conditions such as high levels of humidity and salinity, hurricane and earthquake risk. It should be noted that according to the Statistics Office of the Ministry of Ecology, Sustainable Development, Transportation and Housing, “jobs related to the environment in France” represented some 447,000 full-time jobs in 2012 in the private and public sector. In France, the waste management sector represents the equivalent of 84,900 full-time jobs. It is clear that energy, new technology, eco-technology, waste management are pressing issues for both businesses and public authorities.

Graduates with a degree in the fields of sustainable development, environmental engineering, sustainable materials design, waste management and recycling, building materials in tropical, hurricane- and earthquake-prone environments, will find themselves with the right qualifications to meet the needs of businesses undergoing rapid change and whose needs will be considerable in the years to come. Possible career paths will lead graduates to draft engineering reports on waste collection and management, the manufacture of products and materials, operations and recycling.

The objective is to: develop efficient and complete processes for resources and raw materials; manage the environmental impact of industrial activities; manage environmental legislation (international, national and regional); to understand and apply physical, chemical and mechanical properties of materials (polymers, metals, composites, glass); to manage a product’s life cycle; find solutions to problems of durability in the tropical environment; and develop manufacturing processes suitable for and respectful of the environment.

² Réglementation Thermique Acoustique et Aération (RTAA), building regulations related to energy efficiency, ventilation, and occupant comfort.

³ Réglementation Thermique Guadeloupe (RTG), building regulations related to minimizing the use of air conditioning.

While providing internationally recognized education, our program ensures that graduates are equally qualified to address the different issues related to an intertropical and island environment, such as waste management, pollution for small territories, accelerated degradation of materials, and earthquake- and hurricane-resistance of materials. Graduates will be equipped to operate in the French overseas departments in the Americas, in the Caribbean, at the crossroads of Europe and the Americas, navigating the political, economic, cultural terrain. Upon graduation, students will speak English and Spanish fluently. Graduates will also be proficient in developing strategies for transferring innovations to businesses and also have the tools to start their own company.

Graduates will contribute to the strength and development of our territory through excellence in new technologies in environment, sustainable design and materials recycling.

Take up the challenge of green growth. Become an environmental engineer in materials science.

Sarra Gaspard

Contents

Strategic Orientation and Partnerships

Meeting the needs and expectations of those who would benefit from an engineering degree is a priority for the University of French West Indies (UA). The UA conducted extensive research in what prospective engineering students were looking for and what potential employers needed before embarking upon the creation of its engineering degree program. For example, a market study was conducted at the request of Région Guadeloupe by the consulting firm Katalyse to verify the program's relevance and to map out the companies that would be interested in hiring engineers in the three French overseas departments of Guadeloupe, Martinique and Guiana. The UA engineering program plays an important role in:

- providing a source of highly trained engineers for local companies;
- providing a boost to the local and regional economies;
- providing solid education and training, locally based, and focused on strategically important themes for application in and development of our territories;
- positioning the French overseas territories as a bridgehead for new technologies in energy and materials science in the Caribbean;
- establishing economic and scientific links with our geographical environment.

Our engineers are trained to analyze technological solutions for managing resources sustainably that are suitable for island economies, while taking into account product life cycles and the impact of production processes on the environment.

Our engineering degree program draws upon broad support, especially upon the solid commitment of Région Guadeloupe and a network of partner companies.

To date, partner companies have included: AER, ADEME, Albioma Caraïbes, AME, AMPI, Biométal, Blandin, Bologne, BRGM, Capès, Caraïbes Industrie, Chamber of Commerce and Industry of Guadeloupe, Chamber of Commerce and Industry of Martinique, EcoDEC, ECTP, EDF, FRBT PG, Gardel, GBH, Global Caribbean Fiber, Groupe Loret, ICM, MPI, Sara, Sunzil, Symeg, Synergîle, Syvade, Ciment Lafarge and others.

This partnership extends to the business-education committee, which includes institutions and private sector companies: ADEME, AME, AMPI, Chamber of Commerce and Industry of Guadeloupe, Chamber of Commerce and Industry of Martinique, EDF Guadeloupe, GBH, SYMEG, SYVADE.

The business-education committee continually evaluates the relevance of the program's courses and helps guide changes to the curriculum to meet the needs of local industry.

We also have the goal of developing links between our territories and the Americas and the Caribbean. This has led to partnerships with other engineering institutions, such as L'Universidad Autónoma De Yucatán (Mexico), Universidad del Caribe (Mexico), Université d'Etat d'Haïti, Université de Quisqueya (Haiti), University of the West Indies (Jamaica, Trinidad and Tobago, Barbados). Institutional agreements not only ensure that students can transfer freely between institutions, but they also provide for exchange of pedagogical strategies.

Our engineering program is, however, the only CTI-accredited program in the Americas.

Administration and Faculty

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Calendar

2015-2016 Academic Calendar

1 st Year Students	STUDENT ORIENTATION	3 September 2015
	LIBRARY TOUR	See DOSIP ⁴ schedule
	CLASSES BEGIN	7 September 2015
2 nd Year	STUDENT ORIENTATION	3 September 2015
	CLASSES BEGIN	7 September 2015
3 rd Year Students	CLASSES BEGIN	1 October 2015

2015-2016 Semester Schedule

1 st Semester	From 7 September 2015 to 18 December 2016	
2 nd Semester	From 3 January 2016 to 31 May 2016	
Internship	1 st Year	1 June 2016 to 1 July 2016
	2 nd Year	1 June 2016 to 1 August 2016
	3 rd Year	3 January 2016 to 1 June 2016

2015-2016 Academic Year Vacations and Holidays

— UA Guadeloupe — Approved by the Conseil des études et de la vie universitaire (CEVU)⁵ of 2 June 2015

Toussaint	Friday 30 October to Monday 2 November 2015 (inclusive)
Armistice	Wednesday 11 November 2015
Noël	Saturday 19 December 2015 to Sunday 3 January 2016 (inclusive)
Carnaval	Monday 8 February to Wednesday 10 February 2016 (inclusive)
Mi-Carême	Thursday 3 March 2016
Pacques	Thursday 24 March to Sunday 3 April 2016 (inclusive)
Fête de travail	Sunday 1 May 2016
Ascension	Thursday 5 May 2016
Victoire 1945	Sunday 8 May 2016
Pentecote	Monday 16 May 2016
Abolition de l'Esclavage	Friday 27 May 2016

⁴ Direction de l'Orientation, des Stages et de l'Insertion Professionnelle, Department of student orientation, internships and job placement.

⁵ Conseil des études et de la vie universitaire (CEVU), Council of academics and student life, a university committee of faculty, staff and students that regulates certain aspects of university policy.

Diplôme Génie Environnement: Spécialité Matériaux
[Environmental Engineering Degree: Concentration in Materials Science and Engineering]

The Environmental Engineering Degree with a concentration in Materials Science and Engineering is a 3-year postgraduate degree conferred by the University of the French West Indies (UA). Accredited by the Commission des Titres d'Ingénieurs (CTI) in May 2012 and again in June 2015, the program began in September 2012 as a partnership with École Nationale Supérieure des Ingénieurs en Arts Chimiques Et Technologiques (ENSIACET-INP) in Toulouse; students took classes their first year at ENSIACET and the remaining two years at the Fouillole campus in Guadeloupe. Beginning in September 2015, students can complete the entire degree from Guadeloupe, with the option of exchange with ENSIASET.

Purpose

Providing broad knowledge in engineering, the UA Engineering Degree prepares students to become qualified engineers in materials science and engineering, with a heavy focus on sustainable development. The program is centered on issues that affect island environments subject to conditions of tropical climate.

The program also offers targeted learning in innovative business creation. We are at the crossroads of Europe, the Caribbean and the Americas, and understanding the range of economies found in these regions is essential. All students therefore take courses in language, comparative law and economics during the 3-year program.

The Environmental Engineering Degree, with a concentration in Materials Science and Engineering provides graduates with knowledge and training in the design (traditional, new, eco-friendly), recycling, and maintenance of materials. At our latitudes, we experience accelerated degradation of materials as the result of high average temperatures, high levels of humidity and salinity, the presence of micro-organisms and more. It is therefore necessary to use materials suitable for our climate conditions. At the same time, our limited landmass also poses a serious challenge to how we manage waste and to our options for recycling. The program's objective is to train future engineers who are able to manage a product's life cycle, from its design, through its use and maintenance, to its recycling and disposal, while taking into account environmental considerations. Coursework also specifically addresses materials used in construction.

Materials Design Maintenance Recycling: CR2M

<http://www.univ-ag.fr/ingenieur>



Knowledge and skills

The principle knowledge and skills can be broken down as follows:

Field-specific knowledge and skills

- Sustainable development and environmental engineering:
 - Organize and develop resources (raw materials, energy sources, etc.)
 - Manage impact of industrial activities on the environment (manage industrial risk)
 - Have knowledge of environmental legislation at the international, national, and regional levels
- Innovation and entrepreneurship
 - Reduce the number of steps between innovation and industry
 - Create a company
- International partnerships Europe/Americas (comparative law and economics, culture and civilizations, etc.)

General knowledge and skills

- Know how to define and implement a scientific and technical process in the context of sustainable development
- Master the use of tools of industrial engineering managing energy sources and raw materials
- Master the engineer's methods and tools
 - Identify and resolve problems
 - Collect and interpret data
 - Use computer tools

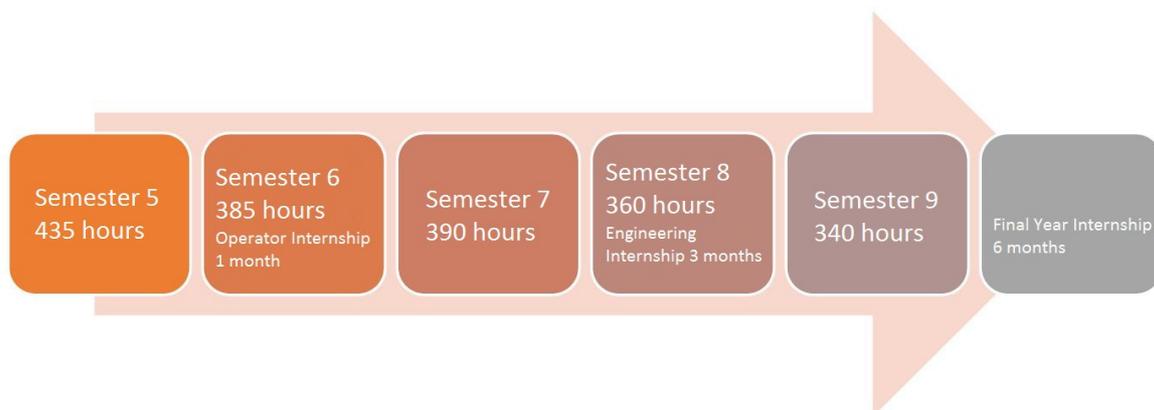
- Analyze and design complex systems
- Create a company or become an active member of an organization by drawing upon a solid understanding of the business environment
- Become an active member of an organization, contributing to its growth and development
- Manage environmental problems related to business operation
- Monitor technological developments and technology transfer in order to implement new processes/create innovated companies

Engineering knowledge and skills:

- Know and master physical/chemical/mechanical properties of materials: polymers, metals, composites, glass.
- Diagnose damage to materials and know how to propose solutions suitable for the domain and environment of use
- Manage waste management projects, including recycling
- Recycle materials with the objective of creating new materials (reuse of waste materials, agro-materials) in the interest of sustainable development
- Help local authorities implement waste management policies
- Streamline energy costs of an industrial process

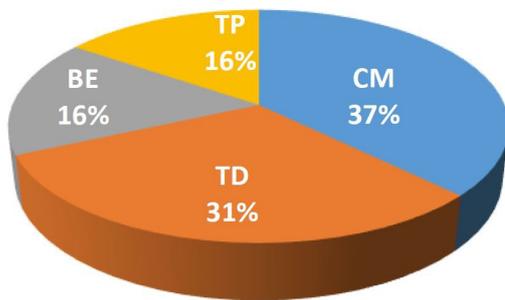
Curriculum

The content of six semesters is detailed below

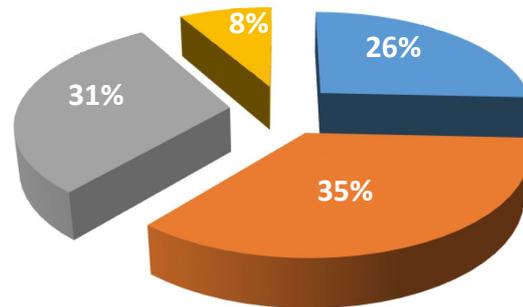


The distribution of hours of instruction in lectures, discussion sections, laboratory, senior design projects, as well as the unit proportions are summarized below.

Program Organization



37% Cours magistraux (CM): Lectures
 31% Travaux dirigés (TD): Discussion sections
 16% Travaux pratiques (TP): Laboratory
 16% Bureau d'Étude (BE): Final year project



35%: Sciences and techniques in materials science and engineering
 31%: Economics, business administration and management, human resources, social sciences
 26%: Basic sciences
 8%: Science and tools in sustainable development

The Materials Science and Engineering and the Energy Systems Engineering degrees share the same classes in humanities and social sciences.

Students from both concentrations collaborate on multi-disciplinary projects that are assigned throughout semesters 6, 7 and 8.

Development of knowledge related to engineering

Beginning from the first year, students discover careers in engineering by meeting industry professionals during numerous mini-forums, seminars, etc.

Physical education is a curricular requirement during the first two years. It helps students gain self-confidence in individual and group contexts.

"Bureau d'Étude" final year project

Beginning in Semester 7, students learn through hands-on sessions organized in the form of an engineering design firm with guidance from the instructor team. The goals are:

- to encourage learning through problem solving;
- to promote autonomous acquisition of knowledge, to teach students how to use cross-disciplinary textbook case studies provided by the instructor team;
- to develop professional skills relative to reasoning and organization.

Multi-technological projects

This is a project management course that is conducted each semester starting from Semester 6. Students gain a better understanding in the way in which they learn and organize themselves, providing excellent preparation for a future role as project manager. The goals are:

- to give each student the opportunity to develop individual projects;
- to know how to apply and transfer acquired knowledge (cross disciplinary);
- to develop student autonomy.

Internships

First year internships, so called “operator internships,” should provide the student with first-hand knowledge and experience of a company’s operations.

Lasting one month, the operator internship must contribute to understanding the company. This internship constitutes the first contact between the engineering student and the company. It should allow the student to understand the company’s overall organization and operation, beyond even the intern’s given sector.

The *2nd year internship*, or so-called “engineering internship,” should provide the student with the opportunity to apply scientific and technical knowledge

Lasting a minimum of 14 weeks within the same company, it constitutes the student’s first professional experience. The student must participate in digital or material task related to coursework; typically, the student must contribute to the resolution of a technical problem related to his or her degree concentration.

This internship may take place abroad.

Final year project “Engineer-level Mission” (6 months)

This project is the culmination of the student’s work through the 3-year program, giving future graduates the opportunity to demonstrate real-world skills as an engineer. The student will present and pursue a technical or business solution integrating cross-disciplinary aspects of learning. The student must demonstrate solid competence in project management.

This internship may take place abroad.

Internship Requirements

Internship	1 st Year	2 nd Year	3 rd Year
<i>Duration</i>	1 month	3 months	6 months
<i>Written report</i>	10 pages	30 pages Summary in English	30 pages Summary in English
<i>Oral presentation</i>	10 min	15 min in English	20 min in French

Proficiency Passport

Each student has access to a digital dashboard on the UA intranet that lets the student track his/her progress in validating knowledge and skills set out in the degree program.

International Exchange and Internships

Students may be eligible for the following financial aid to fund an exchange or internship experience abroad:

Grants for international student exchange

Contact: Bureau des relations internationales⁶: brin@univ-ag.fr

Details on grants:

- The Grant Committee awards grants in October and February.
- The program requires students to study or do an internship abroad for at least 2 months.
- Eligibility: students with financial aid or who are recipients of CROUS annual emergency funding

⁶ Bureau des relations internationales, Office of international relations.

- Students must submit the internship agreement with their application.

Extra-regional Grant

Contact: julien.dino@cr-guadeloupe.fr

For more information: [http://www.regionguadeloupe.fr/des-aides-des-services/guide-des-aides/detail/actualites/bourse-aide-extra-regionale / categorie /formation-enseignement-jeunesse/](http://www.regionguadeloupe.fr/des-aides-des-services/guide-des-aides/detail/actualites/bourse-aide-extra-regionale/categorie/formation-enseignement-jeunesse/)

Application documents are available from L'hôtel de Région, avenue Paul Lacavé Petit-Paris 97100 Basse-Terre.

Applications must be received at least three (3) months before the start of the internship. Students must therefore find a host company or laboratory BEFORE submitting their applications.

For more information, please contact Mr. Philippe Thomas, Head of internships at pthomas@univ-ag.fr.

Detailed Syllabus

Year 1

	UE	UE Course Name	EC	Number of hours				ECTS	
				CM	TD	TP	BE	EC	UE
Year 1 - Semester 5	UE1	Basic sciences	Thermodynamics	12	10	8		2	9
			Homogenous kinetics	7	7	4		2	
			Transport phenomena	8	10	0		1	
			Balanced equations	7	7			1	
			Transformation of matter	10	10			1	
			Introduction to continuum mechanics I	10	10	0		2	
	UE2	Industrial engineering	Industrial chemistry and processes	5	5	0		1	5
			Physics technology			30		2	
			Ideal reactors	8	8			1	
			Separation processes	7	7	0		1	
	UE	Mathematics and modeling	Mathematics	10	10			2	6
			Algorithm	10	10			1	
			Programming	10		10		2	
			Experimental methods	5	5			1	
	UE	Environmental engineering	Challenges in sustainable development and the economy	13	7			1	2
			Geopolitics of resources in the Americas-Caribbean	8			2	1	
	UE	Topics for professional engineers	Quality, Hygiene, Security, Environment (QSHE)	10	5			1	8
			Business processes	10				1	
			Language I	15	15			2	
			Language II	15	10			2	
Physical education					20		1		
Project						10	1		

Classes taught with Energy Systems Engineering

	UE	UE Course Name	EC	Number of hours				ECTS	
				CM	TD	TP	BE	EC	UE
Year 1 - Semester 6	UE1	Multi-scale modeling in materials science	Quantum physics-chemistry (solid-state physics)	15	15			2	8
			Continuum mechanics II	10	10	0		2	
			Thermodynamics of solids	15	15	0		2	
			Materials science and engineering	15	15	0		2	
	UE2	Engineering sciences	Crystallography	10	10	0		1	5
			Analytical chemistry	7	8			1	
			Electrochemistry	5	5			1	
			Organic chemistry/Polymers	15	15			1	
			Probability and statistics	10	10			1	
	UE	Travaux Pratiques [discussion sections]			50		5	5	
	UE	Topics for professional engineers	Topics in engineering careers / seminars	20				1	9
			Business management and industrial ecology	15	10			2	
			Languages I	15	15			2	
			Languages II	15	10			2	
			Physical education			20		1	
Project management				10			1		
UE	Internship					3	3		

Year 2

	UE	UE Course Name	EC	Number of hours				ECTS	
				CM	TD	TP	BE	EC	UE
Année 2 – Semestre 7	UE	Structures and materials	Resistance of materials	10	5		5	1	7
			Structure	10			10		
			Mechanics of materials	8	12	5			
			Applied mathematics	14	6	15			
	UE	Physical/chemical analysis	Characterization techniques	9	10	6		2	5
			Structure-property relationships	10	7		3	1	
			Polymers	9	10	6		2	
	UE	Environmental engineering	Environmental management	10			10	1	4
			Microstructure phase transformation	10	10		5	2	
			Non-destructive testing	6	9			1	
			Travaux Pratiques [discussion sections]			65		6	6
	UE	Topics for professional engineers	Culture and civilizations of Europe, the Caribbean and the Americas	20				1	8
			Physical education		15		5	2	
			Languages I	10	15		5	2	
			Languages II	10	10		5	2	
Multi-technological project						10	1		

Classes taught with Energy Systems Engineering

UE	UE Course Name	EC	Number of hours				ECTS	
			CM	TD	TP	BE	EC	UE
UE	Surfaces and interfaces	Physics and chemistry of surfaces	5	5			1	4
		Damage mechanisms	10	10		5	1	
		Corrosion	10	15			2	
UE	Engineering sciences	Databases	5			5	0.5	4
		Measurement chains, sensors and multi-materials	5	5		5	0.5	
		Composite materials and multimaterials	12	13			1	
		Development and formation of metal and ceramic materials	10	5			1	
		Structural mechanics	15	5		5	1	
UE	Environmental engineering	Microbiology	6		4		1	5
		Agro-materials	20	5			2	
		Weather & climate change	5	5			1	
		Carbon accounting and Life Cycle Assessment (LCA)	5	5		10	1	
	Travaux Pratiques [discussion sections]			65		4	4	
UE		Legal environment in the Caribbean/Americas	10	5			1	6
		Languages I	10	15		5	2	
		Languages II	10	10		5	2	
		Physical education			20		1	
	Practical applications	Multi-technological projects / seminars				20	2	7
		Engineering internship					5	

Year 3

UE	UE Course Name	EC	Number of hours				ECTS	
			CM	TD	TP	BE	EC	UE
UE	Tropical environment	Marine atmospheric environment - Ecosystem	10				1	6
		Marine atmospheric corrosion - Biocorrosion - Bioprotection	5	5	5	10	2	
		Polymer degradation	10	10	5		1	
		Natural risks	5			5	1	
		Materials innovation	5			5	1	
UE	Modeling	Modeling assemblies (earthquake resistance)			10		1	2
		Structure optimization			10		1	
	Travaux Pratiques [discussion sections]			20		2	2	
	Environmental engineering	Waste recycling and management	8	2		15	2	6
		Digital manufacturing recycling and biomaterials	5			5	1	
		Building materials	10			10	2	
		Physics of residential construction (Environmental standards)	5			5	1	
UE	Innovation and entrepreneurship	Technology and economic intelligence	20				2	6
		Intellectual property rights	12	8			2	
		Company start-up and market studies					2	
UE	Topics for professional engineers	Job-seeking techniques	5			5	1	8
		Change and conflict management	5			10	1	
		Human resources management and labor law	7	6		7	1	
		Financial and accounting management	10	10			1	
		Languages I	5	12		13	2	
	Languages II	5	12		8	2		

Prospective Careers

- Research and Development Engineer (design, development, innovation, sustainable development)
- Engineering Consultant (advisory, expertise)
- Production Engineer (production site management, coordination of deposit exploitation and production)
- Maintenance Engineer (creation of quality indicators, reliability tools, definition of maintenance procedures)
- Entrepreneur

Program Location

Students register at the University of the French West Indies (UA). The 3-year program takes place at the College of Physical and Natural Sciences on the Fouillole Campus in Guadeloupe.

During the program, engineering students have the opportunity complete a semester at another university or engineering school, either in France or abroad. The student's choice of program must be approved by the Engineering Department, which verifies academic equivalency and suitability of coursework. **Students prepare their student exchange or study abroad experience one year before their expected departure.**

Prospective Students

Admission to the engineering program is by application only. Approximately 20 students will be admitted to an incoming class.

Profile of applicants entering as first-year students

- Students in French "classes préparas"⁷
- Students who hold a Diplôme universitaire de technologie (DUT) in subjects such as electrical engineering and industrial data processing, measurement, etc., or a Brevet de Technicien Supérieur (BTS) in electronic engineering, or a Licence in physics, engineering sciences, electronics and electric energy and automation, and others
- Students who have successfully validated their second year of Licence in physics, engineering sciences, electronics and electric energy and automation
- Non-French students holding a Bachelor of Sciences

Profile of applicants entering as second-year students

- Admissions by application only. Applicants must hold a Master 1 degree, or equivalent degree.

⁷ French Classe préparatoire aux grandes écoles (CPGE), 2-year undergraduate program geared specifically towards admission into top-ranked graduate schools.

Applications for the 2015-2016 Academic Year

Application documents (French only) are available from the University of French West Indies (UA) website:

http://www.univ-ag.fr/fr/inscriptions_2014_2015/inscriptions_2014_2015.html

Applications *must be received before 26 June 2015* at the following address:

Service de Scolarité
Mme Colette Legrand
UFR Sciences Exactes et Naturelles
BP 592
97 157 Pointe à Pitre Cedex Guadeloupe (France)

and/or by e-mail

sarra.gaspard@univ-ag.fr

laurence.romana@univ-ag.fr

ACADEMIC RULES AND REGULATIONS FOR GRADING AND EVALUATION
for Engineering Degrees

These academic rules and regulations for grading and evaluation are governed by national regulations defined by the following statutory legislation:

- Decree #2002-481 of 8 April 2002 relative to university degrees and national diplomas;
- Decree #2002-482 of 8 April 2002 implementing the creation of a European higher education area to the French higher education system;
- Order of 26 August 2008 amending the order of 23 April 2002 relative to the Licence;
- Order of 1 August 2011 relative to the Licence générale;
- Order of 25 April 2002 relative to university studies leading to the Master's degree;
- Order of 25 February 2013 establishing the list of institutions authorized to confer the title of "Ingénieur diplômé"

Note: The "licence professionnel" degree comes under the Order of 19 November 1999 (MENS9902515A) and is subject to specific regulations.

Admissions

Applicants may be admitted to the program in one of two ways:

- For French students: Admissions by application. Applicants who wish to enroll into the program's first year must hold a French Licence, BTS, or DUT degree, or applicants must be enrolled in French Classe préparatoire aux grandes écoles (CPGE). Applicants who wish to enroll into the program's second year must hold a Master 1 degree.
- For non-French students: Admissions decided by an Admission Panel, for enrollment into the program's first or second year, as prescribed by international agreements.

Enrollment is limited. The number of applicants admitted per concentration and per admissions method is decided by the Director of the Department of Engineering based on proposals from the Director of each concentration program and the Academic Dean. This decision is made before application opens to prospective students.

Admission Panels are formed each year to evaluate applications. There is a two-step selection process: Applications are reviewed, and then applicants are interviewed. Once interviews are complete, the Admissions Panel makes a decision and notifies applicants of its decision by email.

Annual Registration

Students must register at the beginning of each year. However, in specific circumstances, registration may be delayed by the Academic Dean for a period not to exceed one month from the start of classes.

Student Exchange and Study Abroad

Student Exchange in France and Study Abroad

Students have the opportunity during their three years to complete one or two semester(s) at another university or engineering school, either in France or abroad. The student's choice of program must be approved by the Engineering Department, which verifies academic equivalency and suitability of coursework.

Students in exchange or studying abroad must be registered at the University of the French West Indies before their departure.

Study or Internship Abroad Requirement

Students must spend at least three months abroad either as a student or as an intern before graduating. If the student has accumulated significant experience abroad before entering the engineering program, this experience may count towards the requirement. Students must request validation from the Academic Dean. Non-French students are not subject to this requirement.

Program Organization

The Engineering Degree is organized into 6 semesters of 30 credits (ECTS) each, over three years (I1, I2, I3).

The period of study may be extended up to two semesters, at the discretion of the Semester Panel.

Each academic year is divided into two semesters. Each semester includes several unité d'enseignement (UE) [education units] that may be broken down into éléments constitutifs (EC) [individual components].

The Engineering Degree includes a total value of 180 ECTS.

Each UE is assigned a coefficient. The credit value scale is identical to that of coefficients.

The number, period, type and duration of examinations, the coefficient, the ECTS of ECs and UEs are provided in the summary tables for each degree and each semester.

The Engineering Department must inform students of grading and evaluation policy by posting grading and evaluation details in the designated information board no later than one month after the start of classes.

English Language Requirement

All UA engineering students must graduate with a minimum level of proficiency in English. Students must have at least a B2 level in English, as defined by the Common European Framework of Reference for Languages (CEFR). Student language proficiency must be certified by a recognized external test (e.g. 785 for TOEIC corresponding to the B2 level required by the Commission des Titres d'Ingénieurs (CTI).

A TOEIC test session is organized at the UA each year by the Engineering Department with the Language Department. The test is open to engineering students in their second or third year of the program. The first test registration is paid for by the Engineering Department. Engineering students bear the costs for any subsequent tests.

Internship Year

Between the second and third year, students may complete an internship either at a company or laboratory, depending on the student's academic and professional goals. A detailed request in writing is submitted to the Director of the Engineering Department. The engineering student is informed of the Director's decision in writing, with the director's seal. Under these conditions, the engineering student is considered to be registered at the UA and the UA will provide the student with a convention de stage [internship agreement].

Required Approvals for Student Exchange and Study Abroad

Students who wish to study abroad during one or two semester must present a detailed list of classes that he/she will take at the host institution. The list must include the corresponding ECTS (after conversion, if necessary). This document must be signed by the International Relations representative, the Director of the Engineering Department, the Academic Dean and the engineering student before his/her departure. This document, called the learning agreement, is a contract. It requires the student to obtain 30 ECTS credits among those mentioned in the list in order for the corresponding semester to be validated by the Semester Panel at the end of the year. However, the student may, for reasons beyond his/her control (e.g., incompatible

times, cancellation of classes, etc.), propose changes to the learning agreement at the start of classes at the host institution. Proposals must be promptly submitted to the UA Office of International Relations. This office will then draw up a new learning agreement and have it validated by all signatories. Students may submit a single request.

Approval of Student Exchange in France

For student exchange conducted in France, the student must contact the host institution and specifically the Head of Academics of the program. The student must list the courses he/she wishes to take and include their ECTS credits. The student must have this exchange approved by the UA Director of the Engineering Department and the Academic Dean. A request for student exchange is then addressed to the Academic Dean of the host institution. Students may submit a single request.

Grading and Evaluation for Students on Exchange Programs or Study Abroad

Students on exchange programs or study abroad will be graded by the host institution. The host institution then sends the all the student's grades to the UA Department of Engineering after each semester. If the student fails an evaluation, the student must retake the exam with the host institution, if such a procedure exists.

The Final Year Panel will examine the grades obtained by the student during the exchange program or study abroad. Grades are evaluated according to UA's criteria and not according to the host institution, as provided in the learning agreement.

Internships

The engineering student is responsible for finding an appropriate internship. Students have at their disposal a database maintained by the Department of Engineering, Academic Services and DOSIP⁸.

Each internship is governed by the "convention de stage" [internship agreement] which set outs the obligations and responsibilities of both parties, in accordance with the regulations in force.

Engineering students can download the agreement in effect from the PARI website (<http://pari.univ-ag.fr/>) or from the Pstages website (<https://www.esup-portail.org/display/PROJPORTSTAGEEMPLOI/ESUP-PStage>).

The agreement in three copies must be signed by all parties **before the start of the internship** and is accompanied by a certificate of third party liability insurance. One copy is retained by the University, one copy is retained by the student, and the third copy is retained by the hosting company or administration. A digital copy is kept in the Engineering Department's archives.

Students must complete two internships before starting their third year.

1. During the **operator internship**, the student takes on operator tasks in order to gain overall familiarity with the company's operations. This internship constitutes the first contact between the engineering student and the company. It should allow the student to understand the company's overall organization and operation, beyond even the intern's given sector. This internship must last for at least four weeks and, so far as possible, must be completed before the beginning of the second year (outside of periods of instruction). The company must provide the student with a letter certifying the internship.
2. During the **engineering internship** the student carries out his/her first tasks as an engineer. The internship lasts at least 14 weeks at the same company. The student must participate in the digital or material task related his/her coursework: typically, the student must contribute to the resolution of a technical problem related to energy systems engineering.

⁸ Direction de l'Orientation, des Stages et de l'Insertion Professionnelle, Department of student orientation, internships and job placement.

3. During the final semester, the student leads a comprehensive project related to industrial applications or targeted research, called the **Final Project**. Completed over a period of six months, the Final Project is an essential component of the program. It should provide the student with the opportunity to demonstrate a level of comprehension and work expected of a working engineer. The student will present and pursue a technical and/or business solution integrating cross-disciplinary aspects of learning. The student must demonstrate solid competence in project management. This internship may take place abroad. Internships are approved by the instructor team to ensure they are in line with the program's objectives.

Registration

Engineering students must register each year. After paying for university fees, the student must enroll in classes. Enrollment is required to sit for the exams.

Registration and enrollment are mandatory. Students who fail to register and enroll may not sit for examinations. The deadline for registration is set by the University. Deadlines are firm.

The Academic Committees examine requests for credit conversion and validation of acquired experience.

Grading and Evaluation

Continuous assessment is used to evaluate student's acquisition of knowledge. Students are encouraged to apply themselves throughout the year.

Each EC includes at least two exams if the EC is composed of 30 hours of instruction or less. An EC includes three exams if the EC is composed of more than 30 hours of instruction.

Continuous Assessment Exams include:

- proctored written exams
- oral exercises (presentation, debate, individual interview, etc.)
- hands-on exercises (TP, BE, etc.)
- papers
- supervised projects
- individual projects
- group projects

Continuous assessment always includes an oral evaluation during each semester.

Foreign students enrolled in the engineering program as an exchange student (e.g. ERASMUS student) are subject to the same continuous assessment conditions.

Students with a disability may be granted special conditions during examination, such as additional testing time for composition and other accommodations. At registration, the student with a disability should contact the UA's Service de la médecine préventive⁹ and submit documentation certifying his/her disability. The UA will establish the necessary accommodations and will transmit the information to appropriate staff, who will then make these accommodations available.

According to continuous assessment policy, students receive their grades regularly.

Students who miss an evaluation must have a well-founded reason, or their absence must be considered a case of force majeure by the instructor. With the Director of the Engineering Program Energy Systems Concentration, the instructor decides whether the student may sit for a make-up exam. If the director and the instructor do not agree, the Chairman of the Examination Panel will make the final decision.

⁹ Service de la médecine préventive, Office of preventive medicine

An *absence non justifiée (ABI)* [unexcused absence] for an examination results in a grade of 0/20 for the exam.

Attendance

Students must attend all scheduled instruction, regardless of the type of instruction (class, TD, TP, tour, conference, etc.). Attendance will be taken regularly by the instructors, using a signed attendance sheet. Unexcused absences may have a negative effect on end-of-year evaluations by the Examination Panel, and may lead to ECTS credits being withheld from the student.

Note: Student grants are awarded to engineering students based on academic progress, student effort and attendance at classes-TDs-TPs and exams. Students who fail to fulfill one of these obligations may have their grant revoked.

Academic Leave

Engineering students may interrupt their studies

- for personal reasons following approval by the Academic Dean and the Director of the Engineering Program Energy Systems Concentration, for no more than two semesters (consecutive or inconsecutive)
- for force majeure, especially for medical reasons, national service, or pregnancy

Régime spécial d'études (RSE) [special academic status]

RSE is granted to the following categories of students:

- Students with employment
- Students with children
- Students with a disability
- Students who are high-level athletes
- Students who are high-level artists
- Students elected to Conseils de l'Université [university council], under the conditions pertaining to the elected representative
- Students approved by UA's Conseil d'Administration [board of trustees]
- Students in an exchange program or study abroad

To be eligible for RSE, the student must submit a request to the Director of the Engineering Program Energy Systems Concentration before the deadline set each semester by the latter. RSE is valid for the current semester. Any change in the regime takes effect only in the following semester.

Students granted RSE status are exempt from attending TDs. However, they are not exempt from TPs, including field trips. Students will be notified in advance of scheduling for these sessions. These students will receive official notice to sit for the exams of these EC.

Academic Advancement

Students who have validated both semesters of a given year are automatically admitted to the next year.

A student who fails one or both semesters may not proceed to the following year. However, if the aforementioned student requires only a few ECTS, the **academic committee may** authorize the student to proceed to the following year, **validating the missing UEs during that year**. **This authorization does not qualify as registration for the following year.**

Students who fail I2 are not permitted to continue on to I3.

Validation

Grades

Grades are given between 0 to 20.

A student's overall grade for an EC is calculated based on the student's EC examination grades multiplied by the given coefficient.

A student's overall grade for a UE is calculated based on the student's EC grades for that UE multiplied by the given coefficient.

A student's overall grade for the semester is calculated based on the student's UE grades for that semester multiplied by the given coefficient.

A student's cumulative grade is calculated based on the average of the student's grades for all six semesters.

The engineering degree is accompanied by the following honors, granted according to the student's cumulative grade:

- *passable* [ordinary degree], cumulative grade from 10 up to but not including 12,
- *assez bien* [third class honors], cumulative grade from 12 up to but not including 14,
- *bien* [second class honors], cumulative grade from 14 up to and not including 16,
- *très bien* [first class honors], cumulative grade from 16 up to but not including 20.

For students who entered the engineering program in the second year (I2), only the average grade from years I2 and I3 are taken into consideration, especially for calculating cumulative grades and honors.

Validation

Validation of an EC requires an average grade equal or greater than 10/20.

Validation of a UE requires an overall average EC grade equal or greater to 10/20. The student then obtains the ECTS credits for this UE.

Validation of a semester depends on the validation of all UEs for that semester.

Validation of a year depends on validation of both semesters.

Make-up Examinations

A UE Examination Panel decides whether to offer make-up examinations for certain types of examinations of an EC.

Students who receive a grade of 10/20 or better for these types of examinations retains these grades.

When an UE composed of several ECs is not validated, the student may only sit for make-up examinations offered for the EC(s) in which the student obtained a grade higher than 5/20 but lower than 10/20.

The student who validated one UE or a semester, but with a 0/20 grade due to an unexcused absence for one or several exams, is authorized to sit for make-up examinations if they are offered. In this case, the student must inform the Chairman of the Examination Panel in writing no later than 48 hours after publication of grades.

Grade Capitalization

Grade capitalization allows a student to retain for an unlimited period a grade equal to 10/20 or better obtained for an UE or an EC. The attributed credits may be used to count towards another degree or towards *validation des acquis* [accredited prior learning]. A validated UE is transferable.

Grade Compensation

Students may not compensate for one year's below minimum grades for with another year's above minimum grades.

Students may not compensate for one semester's below minimum grades for another semester's above minimum grades.

Students may not compensate for below minimum grades in UE for another UE's above minimum grades.

Students may compensate for below minimum grades in one EC with another in the same UE.

Refusing Compensation

The student has the right to refuse grade compensation between ECs of the same UE by sending a request in writing to the Administration, no later than 72 hours after the publication of grades.

The student may then choose to sit for the make-up examination, if such an examination is offered. Students who have refused compensation must accept the make-grade, regardless of the grade and the circumstances.

Validation of Competencies

Validation of an UE, and respective ECs, does not automatically lead to validation of associated competencies. Similarly, a competency may be validated without the entire UE, and respective ECs, being validated. This validation is subject to a separate analysis of grades, namely by distinguishing between examinations of theory and examinations of practice and by taking into account the student's entire academic career (especially for cross-disciplinary competencies). Students can keep track of validated competencies on their dashboard, accessible from their personal account online at any time.

A record of competencies accompanies the diploma.

Awarding the Engineering Degree

The UA's engineering degree is automatically awarded to engineering students who have satisfied the following conditions

- Students who enrolled in the engineering program as first year students must have obtained 180 ECTS credits; Students who enrolled in the engineering program as second year students must have obtained 120 ECTS credits.
- Students must have obtained the minimum score on a recognized English proficiency test (score of 785 on TOEIC), demonstrating their written and oral comprehension and ability to express themselves in writing and speech.
- Students must have spent a minimum of three months abroad, as defined in section 5, paragraph 7.
- Students must have completed an internship lasting at least 3 months.

The degree bears the field of concentration

The degree will note any honors:

- **Très bien** [first class honors]: for students with a cumulative grade equal to or greater than 16/20.
- **Bien** [second class honors]: for students with a cumulative grade equal to or greater than 14/20 and less than 16/20.
- **Assez bien** [first class honors]: for students with a cumulative grade equal to or greater than 14/20 and less than 16/20.

Examination Panels

UE Examination Panel

The UE Examination Panel is made up of the head of the UE and the heads of the EC of the UE. The UE Examination Panel meets at the end of each semester and before the Semester Examination Panels. Department heads and the academic dean may sit on these panels if they wish.

The UE Examination Panel defines, if necessary, the content of the make-up exam by taking into account the grades obtained by students in the various ECs of the UE. The panel decides the examination conditions (duration, written/oral, open book/closed book, etc.) and communicates this information to Academic Services, which then informs the students.

Semester Examination Panel

The composition of the Semester Examination Panel is subject to an order published by the UA upon the proposal of the Department of Engineering. The panel includes instructors and researchers involved in the degree program, as well as qualified individuals who have contributed to teaching, or who are selected based on their competencies, upon the proposal of teaching faculty. The chairman of the Panel is appointed by the director of the department in consultation with the academic dean and the head of the concentration.

The Semester Examination Panel meets at the end of each semester.

The Panel decides whether a student may proceed to the next semester given the student's grades. The Panel may award additional points to bring the student's semester average up to 10/20.

At the end of year I1 and I2, the Panel also decides whether to validate that year, given the student's grades. After consideration, the panel may award additional points to bring the student's year average up to 10/20.

The presence of all panel members is required. Semester Examination Panels meet privately and decisions are final. The Panel's decisions may not be appealed, unless a material error has been made. After meeting, the Panel officially announces the grades.

Announcement and publication of grades

Engineering students are officially dismissed only when grades are published.

Review of Exams and Interview

Students may, within a reasonable period, request to review their exams and meet with the instructor. To help with the organization of these meetings, the instructors' office hours are posted for each course after grades are announced.

Disputing Grades: Recourse

Students who dispute their grades may refer the matter to the Chairman of the Examination Panel, the University President or his/her delegated representative, no later than two months following the Panel

session, to request that the panel re-examine their case, and providing a specific reason related to a material error.

A certificate confirming the successful completion of studies and award of the diploma is provided to students no later than three weeks after final grades are published.