



POLYTECH
ANGERS



AUTOMATION AND
COMPUTER
ENGINEERING

QUALITY, INNOVATION
AND RELIABILITY
ENGINEERING

CIVIL
ENGINEERING
BUILDINGS & SAFETY

BIOLOGY
AND
HEALTH SYSTEMS



UNIVERSITE
BRETAGNE
LOIRE

Cti

cdefi

Conférence des Directeurs
des Ecoles Françaises
d'Ingénieurs

université
angers

EXPERIENCING THE WORLD IS THE GOAL OF İSTİA'S DEGREE PROGRAMS



1100
students

12
months
Practical
internships



1 1ST YEAR PREPARATORY CLASSES

2 2ND YEAR PREPARATORY CLASSES

INDUSTRIAL
EXPERIENCE
1 MONTH

3 1ST YEAR ENGINEERING CURRICULUM

General education
Core curriculum with specialization

INTERNSHIP
ABROAD
3-4 MONTHS

4 2ND YEAR ENGINEERING CURRICULUM

General education
Specialist curriculum
Project

INDUSTRIAL
INTERNSHIP
3-4 MONTHS

5 3RD YEAR ENGINEERING CURRICULUM

General education
Specialist curriculum
Project

END OF STUDY
INTERNSHIP
5-6 MONTHS



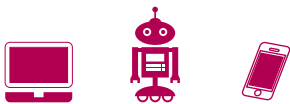
100%
mobility



**MASTER OF
ENGINEERING
DEGREE**

AUTOMATION AND COMPUTER ENGINEERING

- Software development
- Automated Systems
- Virtual Reality



QUALITY, INNOVATION AND RELIABILITY ENGINEERING

- Quality, Organisation and Performance
- Innovation and Product Design
- Complex Systems Reliability



CIVIL ENGINEERING, BUILDINGS & SAFETY

- Risk and Safety Management
- Facility and Property Management



BIOLOGY AND HEALTH SYSTEMS

- Innovative Engineering of Health Products
- Management of Complex Processes in the Health Sector
- Risk Management in Health Sectors



More than
60
international
partners



INCOMING STUDENTS

- Dual degrees
- International Master degree
- Semesters for exchange students
- Internships in Research Labs

6
research labs



AN EXCITING AND ENRICHING STUDENT LIFE!

The Student Office organises social events all the year round and strengthens personal relations through several networks. All this contributes to the development of an 'Engineering School Spirit'.

- Sports, music, cultural and social events,
- Trips/outings (skiing, climbing and other outdoor activities),
- Humanitarian involvement (Téléthon, AIDS night, etc).



ANGERS, THE NUMBER 1 FRENCH CITY FOR QUALITY OF LIFE!

Located in the heart of the Loire Valley, Angers is a classic French city, with just the right amount of culture, good food and international openings. Tomorrow's European capital of sustainable development, Angers gives you the lifelong skills to guide you to future success.

- Some not-to-be missed events: European First Film Festival "Premiers plans" in January, "Made in Angers" in February, street festivities "Les Accroches-Coeur" in September, and more.

For more information: www.angersloiretourisme.com



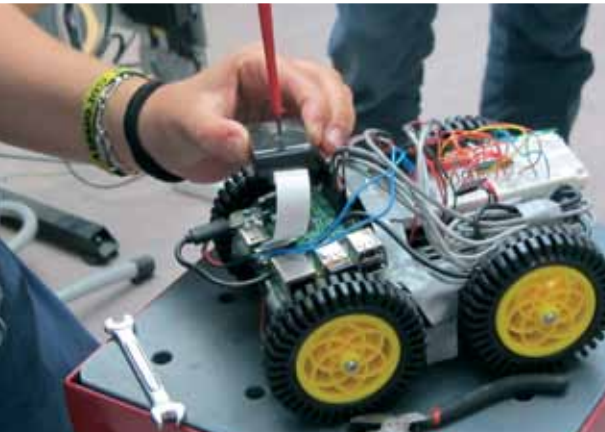
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Crédits photos : Istia avec l'aimable autorisation des étudiants
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Juin 2017



The **Automation and Computer Engineering Department** trains operational and versatile engineers for the fields of computer science, automated systems and innovative human-machine interfaces.

Our engineers learn to:

- **integrate information technology** in automated processes (SCADA systems, data exchanges and management, etc.) and in electronic solutions (cyberphysical and embedded systems, connected objects, intelligent sensors, etc.) complying notably with industry 4.0 and smart factories.

- **master software development** using various programming languages, environments and network communications.

A specific focus is related to cybersecurity.

- **conceive, develop and assess** virtual reality applications and human, machine and environment interfaces.

Cross-disciplinary skills in human relations, organisation and project management are developed through numerous projects, collaborative work and internships.



POSITIONS

- **SOFTWARE DEVELOPMENT**
Software Development and Study Engineer – Network, System or Databases Administrator
- **AUTOMATED SYSTEMS**
Automation Engineer – SCADA and Traceability Engineer – Industrial Process Manager – Real-time Engineer – Embedded Systems Engineer
- **VIRTUAL REALITY AND HUMAN MACHINE INTERACTION**
Project Engineer – Software Development Engineer – Consultant Engineer in New Technologies – Virtual Reality Environment Designer

FIELDS OF ACTIVITY

- **IN IT SERVICES COMPANIES:** telecommunication, application provider, banking, insurance, finance, industrial computing services, augmented reality, virtual environment
- **IN AUTOMATION DEPARTMENTS:** energy, mechanics, agri-food, electronics, water treatment, home automation, equipments, robotics, automobile
- **IN SERVICE SECTOR COMPANIES:** consulting in computer and digital technologies

CURRICULA



3	3RD YEAR
	General courses English – Spanish or German – Economics – Sports – Company Environment – Communication – Management – Accounting – Integration Challenge
	Fundamentals in Engineering Mechanical Engineering – Operational Research – Industrial Instrumentation – Signal Processing – Introduction to Quality and Innovation – Project
	Automated Systems Industrial Automation – Modelling and Simulation- Motors and Servo-drives – Automatic Control – Microcontroller – Robotics
Computer Engineering C language – Unix – Python – Human Machine Interface – Databases – C# Object Oriented Programming – Virtual Reality – Computer Networks – PHP Web	
Project and internship abroad (> 3 months)	

4	4TH YEAR
	General courses English – Spanish or German – Sports – Communication – Team Management – Liability and risk prevention Law – Financial Analysis – Project Operational Planning
	Fundamentals in Engineering Digital Electronics – Industrial Vision – Image Processing – Data Structure – Enterprise Resource Planning
	Automated Systems Industrial Networks – Scada systems – Traceability – Optimization – Mobile Robotics – Process Control – Real Time – Embedded Electronics
Computer Engineering Software Engineering – Virtual Reality – Unix Server Administration – Database Administration – JAVA and JAVA EE Programming – C++ Programming – IT Security	
Conferences, project and internship (3-4 months)	

5	5TH YEAR
	General courses English – Industrial Property and Patents – Innovation – Professional Integration – Liability and Risk Prevention – Projects costs management
	Computer Engineering and Sciences Computer Project Management – Digital challenges, IOT – Software Engineering – Mobile Programming – WEB HTML5 Programming
	3 Specialisation Programmes - Control Systems and Industrial Computing Advanced Automation – Industrial Robotics – SCADA Systems - Human Machine Interface and Virtual Reality Physical Simulation – Interaction and Multi-modality – Modelling and Haptic Rendering – 3D Animation Techniques and Modelling – Behavioural Interfaces – AI - Cybersecurity Unix system administration – Networks and architecture – Applied cryptology – Computer security – Connected devices
Conferences, project and internship (5-6 months)	

This training has a strong international dimension and classes can be taught in **ENGLISH**

3 SPECIALISATION PROGRAMMES

An engineer having SAGI qualifications masters a double competence: specialist in automation (control engineering) and in computer engineering. They are immediately operational in information technology consulting industry or in manufacturing. sector.

➔ Control Systems and Industrial Computing

provides additional knowledges in process control and industrial robotics. Industrial applications and emerging technologies are highlighted.

➔ Human Machine Interface and Virtual Reality

Specific knowledges related to the mastering of advanced technologies in virtual reality are investigated. Developments of HMI solutions are proposed. Applications are related to health monitoring, merchandising, collaborative robotic, ...

➔ Cybersecurity

Considering the increasing reliance on computer systems, the internet and wireless technologies and due to the growth of numerous devices that constitute the internet of things, cybersecurity is one of the major challenges for information technology consulting industry or in manufacturing sector.

COMPANIES THAT HAVE RECRUITED OUR ENGINEERS:

Thalès – Capgemini Lab’Innovation – Parrot – Actémium – Bocard – Renault – PACK’R – Atos Integration – Eiffage Energy – Ubisoft – Apollo Ssc – Allociné – Worldline, etc.



Our **Building Operations-Maintenance and Safety (BS) Engineers** provide the internal environmental conditions that enable business processes, all along the **building life cycle**, to function at an optimum level while providing comfort, health, welfare and safety conditions for occupants. They understand how the **engineering, operating and maintaining services** influence the **performances of buildings**, such as **energy efficiency**.

The BS designers key objective is the trouble-free use of the engineering services of any **property operator** both in terms of economic, reliable performance and ensuring that

legislation is complied with. They use **risk assessment methods** allowing to anticipate and mitigate the impact of business, design, operation and disposal risks.

The BS engineers have the ability to produce a **maintenance contract**. They carry out **commissioning and testing** to ensure that the design intent is achieved in practice. They also determine how to control the **building services**, the performance of any **engineering installation**. They are able to implement the **maintenance strategy**. They have the ability to perform **condition surveys** and **maintenance audits activities**.



POSITIONS

BUILDING SERVICES AND SAFETY ENGINEERING

Director of Technical and Security Services – Head of Technical Project Management and Supervision – Building Site supervisor – Project Manager – Building Manager – Infrastructure Operations Supervisor – Facility Management Engineer – Consulting Engineer in Facility Operation – QSE engineer – Head of Operations – Fire Safety Manager – Project Manager– Head of Risk Management and Prevention Department – HSE expert – Work Safety Project Manager

FIELDS OF ACTIVITY

FACILITIES ET PROPERTY MANAGEMENT

Multitechnical Services – Property management – Building site supervision and organisation – Consultancy – Business center management – Commercial real estate management: shopping malls, conference center, exhibitions – Management of catering patrimonial assets – Banking – Construction inspection – Hospital Security Department – Risk management and prevention consulting – Large industrial and commercial group building management – Regional Authorities

Our graduates can work as **head of fire safety**; the school is authorised to issue **SSIAP 3 certification** (Security Services for Emergencies and Personal Assistance, level 3) required for high-rise buildings. They are able to **manage risks**, **organise prevention**, **supervise** safety department organisation and **design** crisis management processes.

CURRICULA

72%
of trainers are
professionals

3	3RD YEAR
	General courses English – German or Spanish – Sports – Company Economics – Financial Analysis and Accounting – Building Cost Expertise – Computer Network – Communication – Organisational Sociology
	Fundamentals in Engineering Quality – Projects – Hygiene and Health – Applied Statistics – Design of Experiments
	Building Performance Geotechnical engineering – Safety and Durability of Buildings – Construction Materials – CAD – Building Disorders – Building Site Safety – Fire Protection Fundamentals – Finishing works/Installation
	Energy, fluids, environment HVAC Engineering – Electricity – Thermal Building – Functionality, Comfort – Acoustics – Classified Installations for Environmental Protection – Electrical Risks – Waste Management – Electricity Distribution – Low Voltage Systems – Thermal insulation for building
Internship abroad (3 months)	

Salary
34 k€
(average salary
upon hiring)

4	4TH YEAR
	General courses English – German or Spanish – Project Planning – Sports – Communication – Financial Analysis – Building Cost Estimates
	Maintenance and Safety Engineering Functional analysis – Ecodesign – Life Cycle Analysis – Building Rehabilitation Techniques – Commissioning – Computer Assisted Property Management – Risk Analysis – BIM Management – Data Analysis – Risk Management – Fire Modelling – Fire Origin Investigation – Industrial Risks – Environmental Risks – Performance Guarantee – Enhanced Building Performance – Smart Buildings – Continued Activity Planning – CBRN risks – Operation Planning and Safety – Case study
	Management and Law Contract law – Public Procurement – Human Resources Management – Contract Requirements – Quality Audits – Customer Satisfaction
	Steering Tools Service Quality – Qualification and standards – Energy Manager – Facility Management – Company Policy
Internship (3-4 months)	

5	5TH YEAR
	General courses English – Professional Integration – Occupational Risk Responsibility
	Management and Decisions Project management – Change implementation – Assistance with Decision Making – Risk Management – QSE Management – Health and Building Audit
	Building Operation Maintenance and Safety Commercial Real Estate – Logistics Real Estate – Fire Safety Regulations – Fire Safety
	2 specialisation programmes
Internship (5-6 months)	

2 SPECIALISATION PROGRAMMES

→ Real Estate Enhancement and Sustainability

Improvement and Performance – Building Assistance – Sustainable Social Housing – Property Management – Contract and legal Framework – Real Estate Information System – Assets and Cost Management – Maintenance Project

→ Operational Risk Management

Security Technical Elements – Fire Safety Engineering – Fire Origin Investigation – Safety of Manufacturing Processes – Improved Safety in Building Operation – Human Reliability – Safety Regulations – Safety-related Documents – Implementation of a Culture of Safety – Safety Project

COMPANIES THAT HAVE RECRUITED OUR ENGINEERS:

Artelia, Eiffage Energies, Apsys, SPIE, Savills, Quadrim Atlantique, BNP Paribas Real Estate, Apave, Unibail Rodamco, CBRE...



Engineers in Biology and Health Systems become quickly operational in different fields such as **health care structures, public health organisations, pharmaceutical, cosmetic, biotechnology or agri-food companies, etc.**

Our students acquire scientific knowledge and skills in the field of bioproducts, innovation, quality, risks and project management. Our graduates are able to:

- **Conceive, develop and optimize** innovating processes and products for the health industry
- **Implement appropriate tools and methods for the management** of health structures and projects
- **Set up and develop Quality methods** and optimize logistics
- **Identify and measure risks** related to health activities and environments



POSITIONS

– PROJECT AND ORGANISATION MANAGEMENT

Manager and Assistant Manager of Medical and Health Care establishments – Clinical Research Associate – Biomedical research coordinator

– QUALITY AND LOGISTICS

Quality manager – Risk Management Quality Engineer – Qualification-validation Engineer – Logistics and Flow Manager – Auditor and Quality consultant

– RISK MANAGEMENT

HSE Manager – Risk Manager – Information Systems and/ or Operation Manager – Manager in Sanitary Quality of Buildings – Coordinator of Sanitary and Energy Renovation of Buildings

– INNOVATION AND PLANNING

Research Engineer – Project Manager – Product Conception and Development Manager – Production Manager – Regulatory Affairs Manager

FIELDS OF ACTIVITY

– **MEDICAL OR HEALTH CARE ESTABLISHMENTS:** Clinics, retirement homes, public hospitals: in Management, Quality and Risk Management Department and Clinical Trials

– **HEALTH PRODUCTS INDUSTRY:** Cosmetics, Pharmaceutical, agri-food, biotechnology, health and nutrition companies: in the Quality, R&D, Logistics, Regulatory Departments

– **CONSULTANCY, INSTITUTIONS, PROFESSIONAL BODIES:** Quality, Indoor Air Quality, Health and Nutrition Consultant Offices, Health or Audit Agencies, Clinical Trial Companies

CURRICULA

Projects:

- innovation
- real case studies
- cross disciplinary projects
- professional partnerships
- team spirit

3	3RD YEAR
	General courses English – Spanish or German – Sports – Drama – Communication Tools and Methods
	Fundamentals in Engineering Quality Policy (approach, methods and tools) – Project Management – Information Management (Research and information watch, databases, intellectual property, investigation techniques, etc.) – Company Environment (Organisation and management)
	Health and Biology Engineering Hygiene and Hazards (agri-food microbiology, water-air-environment, control, cleaning and disinfection, infectious agents and risks) – Bioproduct Technologies (molecular and immunological detection, immunotechnology, DNA technology, bioinformatics, extraction, purification, conservation, etc.) – French Health Care Systems
	Applied Study Project – Individual Professional Project Internship abroad (3 months)

4	4TH YEAR
	General courses English – Spanish or German – Sports or Drama – Communication Simulation – Law and Regulations – Preparation for Professional Integration
	Fundamentals in Engineering Quality (HSE management, quality management, audits...) – Project Management – Company Environment (HR management, financial and economic management, flow management, strategy, marketing, etc.) – Conception, Innovation, R&D and Production Approaches and Tools (conception-innovation, automated systems, packaging, R&D, production...)
	Health and Biology Engineering Hygiene and Hazards (control, GLP/GMP, qualification, validation, traceability) – Bioproducts Technologies (transformation – formulation, etc.)
	3 Specialisation Programs: - Innovative Engineering of Health Products (IPPS) - Risk Management in Health Sectors (GRSS) - Management of Complex Processes in the Health Sector (MPCS) Applied Study Project – Individual Professional Project Internship (4-5 months)

5	5TH YEAR
	General courses English – Sports or Drama – Communication and crisis management – Law and Regulations – Preparation for Professional Integration
	Fundamentals in Engineering Company Environment (project funding and cost management, change management, etc.) – Conception, Innovation, R&D and Production Approaches and Tools – Reliability, Performance and Risk Management
	Health and Biology Engineering – 3 specialisation programmes: - Innovative Engineering of Health Products (IPPS) - Risk Management in Health Sectors (GRSS) - Management of Complex Processes in the Health Sector (MPCS) Applied Study Project – Individual Professional Project Internship (5-6 months)

40%

of trainers are professionals



Product developed by students during year project



3 SPECIALISATION PROGRAMMES

➔ Innovative Engineering of Health Products (IPPS)

Sylvanie, Nutrition Regulations ,
Yves Ponroy Laboratories

Cédric, - Senior Project Manager,
Novo Nordisk

Mathilde, R&D Engineer,
Labeyrie

➔ Risk Management in Health Sectors (GRSS)

Auriane, Information Systems Security
Manager,
GCS e-santé Pays de la Loire

Kevin, HSE Manager,
Vilmorin SA

Laura, Quality and Risk Management
Engineer, **Angers University Hospital**

➔ Management of Complex Processes in the Health Sector (MPCS)

Laura, Quality Assurance Manager,
Make-up Forever

Magali, Clinical Research, Arcagy-
Gineco association,
Hotel-Dieu Hospital Paris.

Florence, Nursing Home Manager,
Emera Group



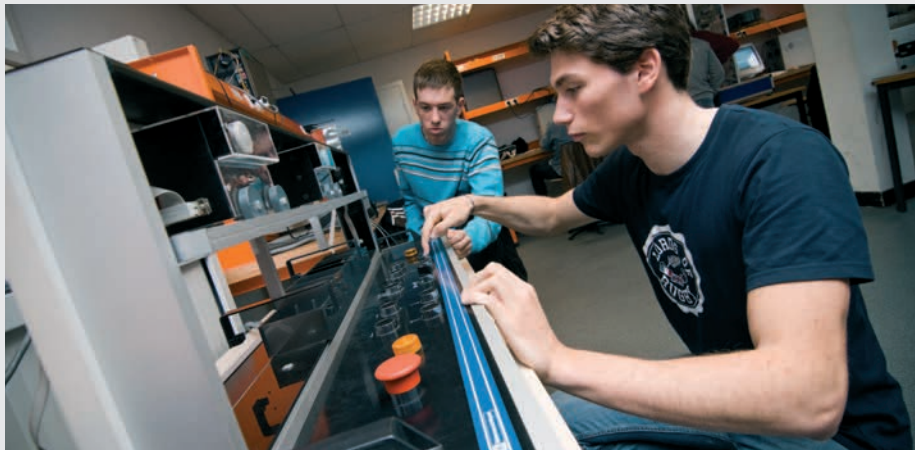
The **Quality, Innovation and Reliability Engineer** participates and manages the actions for **improving** and **guaranteeing** the overall **company performance** regarding the products or **services**, the **industrial processes** and the **organization**. The programme aims to train experts in methods for the **design of innovative products** within a global product life cycle and customer-oriented purpose.

More specifically, the QIF engineer will be able to:

- **Implement and lead a quality strategy**

- **Build technical expertise to guarantee and improve reliability of industrial systems**
- **Create and develop innovative products and processes**
- **Offer innovative, technical and organisational solutions to industrial issues**

Therefore, the Engineer acquires a global vision of his/her company that will make him/her a real player in the competitiveness and risk management issues.



POSITIONS

– **QUALITY**

Operational Security Engineer – Process Methods Engineer – Quality Assurance Engineer – Software Quality Engineer – Project Quality Engineer – Lean Manager – Organisational Optimisation Project Manager – Reliability Engineer

– **INNOVATION**

Conception/R&D/Innovation Engineer – Innovation Funding Consultant – Design Engineer – Engineering Project Manager – IT Engineer – Innovative Entrepreneur

FIELDS OF ACTIVITY

– **ALL FIELDS OF ACTIVITY**

- Engineering and consulting - Transportation - Bank and insurances - IT - Energy power industry (Oil & Gas, nuclear, etc.) - Automotive industry - Telecommunications - Chemical process industry, etc.

CURRICULA

50%
projects and
collaborative work

50%
of trainers are
professionals



3	3RD YEAR
	General courses English, German or Spanish, Economic Environment, Sports, Company Organisation, Integration Challenge, Communication, Management, Accounting
	Applied sciences Applied Statistics and Dependability, Optimisation (OR), Manufacturing Processes and Materials
	Fundamentals in Engineering Mechanical Engineering, Computer Engineering, Electronic Engineering, Industrial Engineering / Manufacturing Management, Optimisation and Management of Processes, Industrial Automation
	Quality and Innovation methods Information Research and Patent Documentation, Life Cycle Analysis, Introduction to Innovation and Quality, Problem Solving, Engineering Project, Innovation Methods, Metrology and Quality Control
Internship in a foreign country (3 months)	



4	4TH YEAR
	General courses English, German or Spanish, Communication, Sports
	Sciences and Technologies Mechatronic and System Engineering, Advanced Spreadsheet, Industrial Optimisation, Computer Engineering, Statistical Methods and Reliability Models
	Methodology Risk Analysis Methods, Management System, ISO Approaches (QHSE), Customer and Supplier Relations, Engineering Office Dimensioning, Physical Failure, Maintainability
	Management and Law Technological Watch and Knowledge Management, Project Management, Labour law, Intellectual Property and Regulation, Marketing, Management of Global Performance, Sustainable Development, Company Management System Maturity
Projects (Improvement and industry-oriented)	
Internship in a company (3-4 months)	

5	5TH YEAR
	General Courses English, Professional integration, Global Responsibility and Professional Risk Prevention, Project Cost Management, Performance Analysis, Entrepreneurship
	3 Specialisation Programmes
	- Quality Engineering - Innovation - System Reliability Engineering
	Industry-oriented project (21 days)
Internship (5-6 months)	



Nora Q. Year 2015 - Quality Engineer at General Electric - France Quality Performance 2016 Award

3 SPECIALISATION PROGRAMMES

→ Quality Engineering

Manage complex projects - Identify and implement quality tools for monitoring and improving products and processes

→ Innovation

Design innovative products - Manage company knowledge to innovate - Ensure a watch to anticipate future markets

→ System Reliability Engineering

Model and design safe operating systems - Assess and validate reliability of computer, electronic and mechanical systems and lay out operational maintenance procedures

COMPANIES THAT HAVE RECRUITED OUR ENGINEERS:

NEXEYA System, Airbus, Manitou, Magneti Marelli, EADS APSYS, GDF SUEZ, Logica...