Circular57/CIA/2015   02.11.2015

CIRCULAR

Applications are invited from the second year UG students of the University Departments of Anna University for the Double Masters' Degree programme of Anna University and the five Ecoles Centrales Engineering Schools in France.

The interested students can go through the following websites for detailed information:

1. http://www.ec-nantes.fr/version-anglaise/international/
2. http://www.ec-lille.fr/en/
3. http://www.ec-lyon.fr/
4. http://www.centrale-marseille.fr/
5. http://www.ecp.fr/

The above Universities will provide financial support to the students of Anna University in the way of fellowship for their study period in France. The selected candidates will pursue two years at Ecoles Centrales Engineering Schools in France with three year core engineering masters' programme. After being selected for the programme the Anna University students will have to take an intensive course in French as per the norms of the Ecoles Centrales Engineering Schools.

The programme is as follows:

After successfully passing every examination in the first two years in Anna University, the selected students will go to Ecoles Centrales Engineering Schools and enroll in the first year of their masters' programme. After the successful completion of two years in France, the students will come back to Anna University with the transcripts obtained from Ecoles Centrales Engineering Schools. They will be awarded a Certificate/Diploma by Ecoles Centrales Engineering Schools. These students will be directly admitted to the two year Engineering masters' programme in Anna University. The candidates who successfully complete the two year masters' programme will be awarded a Masters' degree by Anna University. After the completion of two years of masters' in Anna University, the transcripts will be sent to Ecoles Centrales Engineering Schools and Ecoles Centrales Engineering Schools will award an Engineering masters' degree.

Interested students can send their applications with the following documents to the Director, Centre for International Affairs, Anna University, Chennai 600025.

1. CV
2. A motivation letter (Explaining why you want to apply to Centrale Nantes for the Double Masters degree programme and what will be the added value to the professional career they foreseen).
3. Transcript of records
4. The Year 2 specialization to be chosen among the 21 available (Attached syllabus)

The deadline for applying the programme is 20th November 2015. The applicants should follow the university norms wherever applicable. After the selection, the successful candidates should complete the appropriate university procedures before leaving.

For any queries, you may contact on international@ec-nantes.fr and one of our Civil Engineering student Ms. S. Ishwarya (Email: ishwarya_civil@yahoo.com) who had successfully completed her two years studies at ECN, France and now doing her M.E. programme in Anna University.

DIRECTOR

To
All Deans of campuses
All Directors and HODs (With a request to display on notice board)
PS to Vice Chancellor
PA to Registrar

ECOLE CENTRALE DE NANTES
CURRICULUM FOR DOUBLE DEGREE PROGRAMME

- **YEAR 1 - CORE ENGINEERING**

- **YEAR 2 - SPECIALISATION**

Specialisation 1	Embedded Control and Power Grids
Specialisation 2	Signals and Images
Specialisation 3	Robotics
Specialisation 4	Engineering Sciences for Housing and Urban Environment
	> Housing Speciality
	> Urban Speciality
Specialisation 5	UrbaniSTIC: Geomatics and urban planning
Specialisation 6	High performance computing in engineering science
Specialisation 7	Computer Science
	> Computer Engineering
	> Information System
Specialisation 8	Product Engineering
Specialisation 9	Industrial Engineering
Specialisation 10	Mechanical Engineering for materials and manufacturing processes
Specialisation 11	Modeling and Simulation in Mechanics (MSM)
Specialisation 12	Aeronautics
Specialisation 13	Ocean: Hydrodynamics and Marine Engineering
Specialisation 14	Energy Production and Management (EPM)
Specialisation 15	Propulsion and Transport
Specialisation 17	Civil Engineering
	> Durability and Risks
	> Construction Engineering
Specialisation 18	Virtual Reality
Specialisation 20	Management of Digital Business and Information Technologies
Specialisation 21	Mathematics and applications

+ 1 professional option to add to the specialisation, among :
   1. *Entrepreneurship*
   2. *Corporate Finance*
   3. *International Business Development Engineer*
   4. *Manager, leader and communicator*
   5. *Sustainable city*
   6. *Perception and sound design*
   7. *Research and development*

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Centrale Nantes

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Student advisor:

FIRST YEAR

Semester	Course Title	ECTS credits
1st Semester	Language 1 (French)	3
	Language 2	
	Physical Education	
	Human and social sciences, Corporate studies	1
	Simulation and Continuum mechanics	8
	Integrated manufacturing and design	8
	Physics and Fluid Dynamics	8
	Choose 1 course among the 4:	
	Information system	
	Electronics, electrical actuator, embedded systems	
	Materials	
	Energetics	
2nd Semester	Language 1 (French)	3
	Language 2	
	Physical Education	
	Human and social sciences, Corporate studies	1
	Industrial project – real life situation project	1
	Internship	3
	Mathematics for engineers	8
	Control engineering	8
	Algorithms and programming	8
	Choose 1 course among the 4:	
	Information system	
	Electronics, electrical actuator, embedded systems	
	Materials	
	Energetics	

Total:

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature)	Institutional Coordinator
Date:	Date:

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Guy LEBRET

SPECIALISATION 1: Embedded Control and Power Grids

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Embedded Systems	3	
	Analysis and control of power systems	3	
	Control methodology of linear systems	3	
	Simulation of dynamical systems – Rapid prototyping	3	
	Modeling and verification of embeded systems	3	
	Systems identification and signal filtering	3	
	Advanced control of nonlinear systems	3	
	Advanced control of linear systems	3	
	Project 1	1	
	Professional option :	3	
	Sports and Foreign Languages	1	
2nd Semester	Real Time Operating Kernel	3	
	Interconnected systems	3	
	Discrete time implementation of control laws	3	
	Synchronous implementation of control laws	3	
	Project 2	1	
	Research and Development project	15	
	Professional option (same option as in the 1st semester)	2	
	Sports and Foreign Languages	1	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature) Date:	Institutional Coordinator Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Student Identity
First Name: _____
Family Name: _____

Home Institution
Name: _____
ERASMUS Code: (for European institutions)_____
Student advisor: _____

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Saïd MOUSSAOUI

SPECIALISATION 2: Signals and Images (SIGMA)

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Statistical signal processing	3	
	Data mining and machine learning	3	
	Signal filtering and system identification	3	
	Signal representation and analysis	3	
	Image processing and representation	3	
	Inverse problems in computational imaging	3	
	Mathematical optimization for signal and image processing	3	
	Embedded Systems	3	
	Signal and image processing project	1	
	Professional option: ……………………………………………………	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Statistical tools for signal and image processing	3	
	Sensor array processing	3	
	Applications in audio engineering	3	
	Industrial and biomedical applications	3	
	Signal and image processing project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature) Date:	Institutional Coordinator Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Philippe MARTINET

SPECIALISATION 3: Robotic

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Advanced Programming	3	
	Robot design	3	
	Non Linear Control and Observation	3	
	Manipulator robot modeling	3	
	Vision for robotics	3	
	Intelligent Vehicle and Transport	3	
	MiddleWare	3	
	AUV and UAV	3	
	Project	1	
	Professional option: ……………………………………………………	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Non Conventional Robots	3	
	Robot Control	3	
	Motion Synthesis	3	
	Synthesis Lab	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature) Date:	Institutional Coordinator Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Centrale Nantes

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Jean-François HETET

SPECIALISATION 4: Engineering Sciences for Housing and Urban Environment (Housing)

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	General scope of urban and housing modern problems	3	
	Energetics	3	
	Urban hydrology and atmosphere	3	
	Acoustics and light	3	
	Construction and structure	3	
	Automatics and domotics	3	
	Data base management	3	
	Virtual engineering	3	
	Project	1	
	Professional option: ……………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Energy in buildings	3	
	Air treatment and climatization	3	
	Structure and pathology of buildings	3	
	Materials for housing	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature) Date:	Institutional Coordinator Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR 20.... / 20....

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Jean-François HETET

SPECIALISATION 4: Engineering Sciences for Housing and Urban Environment (Urban)

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	General scope of urban and housing modern problems	3	
	Energetics	3	
	Urban hydrology and atmosphere	3	
	Acoustics and light	3	
	Construction and structure	3	
	Automatics and domotics	3	
	Data base management	3	
	Virtual engineering	3	
	Project	1	
	Professional option: ……………………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Energy at city scale	3	
	Urban problems for air and water	3	
	Noise and waste management	3	
	Urban management and transportation	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature)	Institutional Coordinator
Date:	Date:

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Myriam SERVIERES

SPECIALISATION 5: UrbaniSTIC: Geomatics and urban planning

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Object-oriented programming	3	
	Databases	3	
	Urban Data Modelling	3	
	Image processing	3	
	Geographical Information Systems	3	
	Professional applications	3	
	Urban Issues	3	
	Urban Models: history and critical analysis	3	
	Project	1	
	Professional option:	3	
	Sports and Foreign Languages	1	
2nd Semester	Urban morphogenesis workshop	3	
	City representation	3	
	Urban Policies	3	
	GIS Engineering	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	Sports and Foreign Languages	1	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature) Date:	Institutional Coordinator Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR 20.... / 20....

Centrale Nantes (ECN)

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Alban LEROYER

SPECIALISATION 6: High performance computing in engineering science

Semester	Course Title	ECTS	Choose
1st Semester	Additional training in programming languages	3	
	How and why use and develop numerical modelization?	3	
	From real geometry to 3D model	3	
	Standard numerical methods in computational structural mechanics: finite-element method	3	
	High performance computing : architecture of supercomputers and programming paradigm, MPI, OpenMP, GPU	3	
	Resolution of large linear systems	3	
	Classification of partial derivative equations (PDE): physical meaning and numerical consequences	3	
	Numerical methods in computational fluid mechanics: Finite-Volume method, mesh-free Lagrangian method	3	
	Project	1	
	Professional option: …………………………………………………………………	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Advanced numerical methods and treatment of error in numerical simulation: error estimation and automatic grid refinement	3	
	Model reduction methods	3	
	Uncertainties and optimization	3	
	Numerical treatment of coupled problems	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature) Date:	Institutional Coordinator Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Centrale Nantes

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Jean-Yves MARTIN

SPECIALISATION 7: Computer Science – Computer Engineering

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Databases	3	
	Software Engineering	3	
	Discrete Mathematics	3	
	Object Oriented Programming	3	
	Knowledge Analysis and Representation	3	
	Industrial Development Software	3	
	Systems and Networks	3	
	Language Theory	3	
	Project: Software Development Project	1	
	Professional option: ………………………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Simulation of intelligent reasoning from knowledge representation	3	
	Step-by-step real time kernel building	3	
	Parallelism and Model Checking	3	
	Systems and Architecture	3	
	Project: Group project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature) Date:	Institutional Coordinator Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Jean-Yves MARTIN

SPECIALISATION 7: Computer Science – Information System

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Databases	3	
	Software Engineering	3	
	Discrete Mathematics	3	
	Object Oriented Programming	3	
	Knowledge Analysis and Representation	3	
	Industrial Development Software	3	
	Systems and Networks	3	
	Language Theory	3	
	Project: Software Development Project	1	
	Professional option: ……………………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Simulation of intelligent reasoning from knowledge representation	3	
	Web Programming	3	
	Information Systems	3	
	Information and Communication Technologies	3	
	Project: Group Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature)	Institutional Coordinator
Date:	Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Emilie POIRSON

SPECIALISATION 8: Option Product Engineering

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	A human factory	3	
	Methods and tools for decision support	3	
	Product Modelling	3	
	Customer Satisfaction and quality management	3	
	Product Design	3	
	Materials/process	3	
	Production system	3	
	Compliance and stabilization of production	3	
	Project	1	
	Professional option: ……………………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Ergonomics of use	3	
	Industrial Design	3	
	Purchasing, costing and pricing	3	
	Rapid Manufacturing	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature) Date:	Institutional Coordinator Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Centrale Nantes

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Raphael CHENOUARD

SPECIALISATION 9: Option Industrial Engineering

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Actors and organization	3	
	Methods and tools for decision support	3	
	Production management	3	
	Product modeling	3	
	Enterprise modeling and performances	3	
	Information systems and knowledge management	3	
	Risks management	3	
	Process, quality and norms	3	
	Project	1	
	Professional option: ……………………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Value networks	3	
	Change management	3	
	Simulation and operations research	3	
	Purchasing, costing and pricing	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature)	Institutional Coordinator
Date:	Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Centrale Nantes

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Bertrand HUNEAU

SPECIALISATION 10: Mechanical Engineering for material and manufacturing processes

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Materials Selection in Mechanical Design	3	
	Finite Element Method	3	
	Structural Mechanics	3	
	Experimental Methods in Materials Science	3	
	Advanced Modeling and Simulation Techniques	3	
	Physical and Mechanical Metallurgy	3	
	Polymers and Composites	3	
	Conferences	3	
	Project	1	
	Professional option: ……………………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Fatigue and Fracture of Materials	3	
	Tools for Metal Forming and Processing Modeling	3	
	Polymer processing	3	
	Composite processing	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature)	Institutional Coordinator
Date:	Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Gregory LEGRAIN

SPECIALISATION 11: Modeling and Simulation in Mechanics (MSM)

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Materials Selection in Mechanical Design	3	
	Finite Element Method	3	
	Structural Mechanics	3	
	Solid Dynamics and Modal analysis	3	
	Finite Element Modeling and Methodology	3	
	Nonlinear Mechanics of Structures	3	
	Plasticity Models	3	
	Composite Structures	3	
	Project	1	
	Professional option: ……………………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Multiphysics	3	
	Crashworthiness and Transportation Safety	3	
	Uncertainties and Optimization	3	
	Fracture and Damage mechanics	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature) Date:	Institutional Coordinator Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Centrale Nantes

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Guy CAPDEVILLE

SPECIALISATION 12: Aeronautics

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Introduction to aerodynamics	3	
	Introduction to numerical computation	3	
	Flight dynamics	3	
	Aircraft design and construction	3	
	Computational aerodynamics I	3	
	Aircraft propulsion	3	
	Aircraft structure modelling	3	
	Turbulence modelling	3	
	Project	1	
	Professional option: ……………………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Computational aerodynamics II	3	
	Aeroacoustics	3	
	Structural dynamics	3	
	Passive security of aeronautic structures	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature)	Institutional Coordinator
Date:	Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Lionel GENTAZ

SPECIALISATION 13: Ocean: Hydrodynamics and Marine Engineering

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Introduction to hydrodynamics	3	
	Marine environment and hydrodynamic loads	3	
	Seakeeping and moorings of marine structures	3	
	Ship stability and manoeuvrability	3	
	Numerical methods for hydrodynamics : part 1	3	
	Shipbuilding and maritime economy	3	
	Experimental hydrodynamics	3	
	Lifting bodies & propulsion	3	
	Project	1	
	Professional option: ……………………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Marine Fluid-Structure Interactions	3	
	Numerical methods for hydrodynamics : part 2	3	
	Advanced hydrodynamics	3	
	Marine Renewable Energies or Offshore oil and gas	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature) Date:	Institutional Coordinator Date:

Contact: international@ec-nantes.fr

Student Identity
First Name: _____
Family Name: _____

Home Institution
Name: _____
ERASMUS Code: (for European institutions) _____
Student advisor: _____

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Alain MAIBOOM

SPECIALISATION 14: Energy Production & Management (EPM)

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Combustion	3	
	Turbomachinery	3	
	Applied thermodynamics	3	
	Engine cycles thermodynamics	3	
	Conventional energies	3	
	Decarbonised energies	3	
	Transport, storage, conversion and management of the energy	3	
	Practical work	3	
	Project	1	
	Professional option: …………………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Energy in buildings	3	
	Heating and air-conditioning systems	3	
	Solar energy	3	
	Carbon balance – Life cycle assessment	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution
Departmental Coordinator (Name and signature)

Institutional Coordinator

Date:

Date:

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Centrale Nantes

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: David CHALET

SPECIALISATION 15: Propulsion and Transport

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Combustion	3	
	Turbomachinery	3	
	Applied thermodynamics	3	
	Internal combustion engines	3	
	Gas dynamics	3	
	Energy management in automotive applications	3	
	Aeronautics propulsion	3	
	Automotive propulsion	3	
	Project	1	
	Professional option: ………………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Marine propulsion	3	
	Space propulsion	3	
	Railways engineering	3	
	Practical works in propulsion	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature)	Institutional Coordinator
Date:	Date:

Contact: international@ec-nantes.fr

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Frédéric GRONDIN

SPECIALISATION 17: Civil Engineering – Durability and Risks

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Mechanics and physics of materials	3	
	Structural and strength of materials	3	
	Mix design and properties of concrete	3	
	Soil and rock mechanics	3	
	Civil engineering and numerical analysis	3	
	Reinforced concrete	3	
	Geotechnical engineering	3	
	Construction engineering management	3	
	Project	1	
	Professional option: ……………………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Design of concrete and metal structures I	3	
	Underground structures	3	
	Seismic risk assessment	3	
	Durability of concrete structures	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature)	Institutional Coordinator
Date:	Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Frédéric GRONDIN

SPECIALISATION 17: Civil Engineering – Construction Engineering

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Mechanics and physics of materials	3	
	Structural and strength of materials	3	
	Mix design and properties of concrete	3	
	Soil and rock mechanics	3	
	Civil engineering and numerical analysis	3	
	Reinforced concrete	3	
	Geotechnical engineering	3	
	Construction engineering management	3	
	Project	1	
	Professional option: ……………………………………………………..	3	
	Foreign Languages	1	
	Sport	1	
2nd Semester	Design of concrete and metal structures I	3	
	Transportation engineering	3	
	Building information modeling	3	
	Design of concrete and metal structures II	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	2	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution	
Departmental Coordinator (Name and signature) Date:	Institutional Coordinator Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Guillaume MOREAU

SPECIALISATION 18: Virtual Reality

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Advanced C++ programming	3	
	Industrial software development	3	
	Fundamentals of Virtual Reality	3	
	Real-time Computer Graphics	3	
	Computer vision and augmented reality	3	
	Geometric and physical models for Virtual Reality	3	
	Scientific visualization	3	
	3D interaction	3	
	Project	1	
	Professional option: ……………………………………………………..	4	
	Sports and Foreign Languages	1	
2nd Semester	Collision detection and haptic feedback	3	
	Hands on Virtual Reality	3	
	Aural immersion	3	
	Virtual Reality Applications : Conferences	3	
	Project	1	
	Research and development project	15	
	Professional option (same option as in the 1st semester)	1	
	Sports and Foreign Languages	1	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature)	Institutional Coordinator
Date:	Date:

Contact: international@ec-nantes.fr

Student Identity
First Name: _____
Family Name: _____

Home Institution
Name: _____
ERASMUS Code: (for European institutions) _____
Student advisor: _____

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Guillaume MOREAU

SPECIALISATION 20: Management Digital Business Information Technology

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	FIST:Foundations in Information Systems aund Technology Management	4	
	ISSP:Information Systems Strategy and Planning	4	
	CISM:Consulting in Strategic Management of IT	4	
	DBBD:Digital Business and Big Data	3	
	BISA:Business Information Systems & Applications	3	
	BMIT:Business models and IT	3	
	MBTC:Managing Business Transformation and Change	3	
	Project 1	1	
	Professional option: ………………………………………………………	4	
	Sports and Foreign Languages	1	
2nd Semester	PRWEB: web Programming	3	
	INTEC:Information Technology	3	
	RVAL:Value Network	3	
	SIROP:Simulation & operations research	3	
	Project 2	1	
	Research and Development project	15	
	Professional option (same option as in the 1st semester)	1	
	Sports and Foreign Languages	1	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution
Departmental Coordinator (Name and signature)

Institutional Coordinator

Date:

Date:

Contact: international@ec-nantes.fr

LEARNING AGREEMENT
ACADEMIC YEAR   20.... / 20....

Student Identity
First Name:
Family Name:

Home Institution
Name:
ERASMUS Code: (for European institutions)
Student advisor:

Host Institution
Name: Ecole Centrale de Nantes
ERASMUS Code: **F NANTES07**
Specialisation's advisor: Guillaume MOREAU

SPECIALISATION 21: Mathematics and applications

Semester	Course Title	ECTS credits	Choose your courses
1st Semester	Functional Analysis	3	
	Probability	3	
	Numerical analysis for partial differential equations	3	
	Introduction to mathematical finance	3	
	Analysis of partial differential equations	3	
	Stochastic processes	3	
	Variational approximations of partial differential equations	3	
	Data mining	3	
	Project 1	1	
	Professional option: ……………………………………………………	4	
	Sports and Foreign Languages	1	
2nd Semester	Stochastic differential equations	3	
	Numerical methods for uncertainty quantification	3	
	Statistical inference	3	
	Regression and time series	3	
	Project 2	1	
	Research and Development project	15	
	Professional option (same option as in the 1st semester)	1	
	Sports and Foreign Languages	1	
	TOTAL ECTS:		

Student signature	date
Home institution advisor (Name and signature)	date

Host Institution Departmental Coordinator (Name and signature)	Institutional Coordinator
Date:	Date:

Contact: international@ec-nantes.fr