Subject name : Mechanics of materials	Code EC : GPM09-MECA
Number of hours per student : 9h	ECTS Number : 1
Reference Teacher : FRANCILLETTE Henri	

Generalities

Objectives *(2000 characters)*

Study of mechanical properties of materials in correlation with their microstructure.

Description *(2000 characters)*

1. Physical mechanisms of the mechanical behavior of materials.
2. Constitutive laws of elasto-plasticity.
3. Microscopic plasticity.
4. Macroscopic plasticity.

Requirements *(2000 characters)*

Materials science, general mechanics, mechanics of solids.

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

Courses

Number of hours per course type: *(2000 characters)*

CM : 9h
TD :
TP :
PR :
CONF :
Autres :

Evaluation *(200 characters)*

A 1-hour written exam.

Bibliography

Bibliography *(2000 characters)*

- J. PHILIBERT, A. VIGNES, Y. BRECHET, COMBRADE, " Métallurgie du minerai au matériau ", Masson, 1998.
- D. FRANCOIS, A. PINEAU, A. ZAOUI, " Comportement mécanique des matériaux ", Tome1, Hermes, 1991.
- D. FRANCOIS, A. PINEAU,A. ZAOUI, " Comportement mécanique des matériaux ", Tome2, Hermes, 1995.

Contacts

Contacts *(2000 characters)*

FRANCILLETTE Henri

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name : Microstructures of Materials	Code EC: GPM09-MIMA
Number of hours per student: 20	ECTS Number : 2
Reference Teacher: GLORIANT Thierry	

Generalities

Objectives *(2000 characters)*

Introduction to thermodynamics and phase transformation in polycrystalline solids.

Description *(2000 characters)*

General aspects of thermodynamics and phase transformation. Germination and growth mechanisms. Surfaces and interfaces in
crystalline solids. Interphases and grain boundaries: notion of coherence.
Texture and anisotropy in polycrystalline materials. Recovery and recrystallisation.

Requirements *(2000 characters)*

Fundamental knowledge of Structural Metallurgy and Crystallography.

Course requirements and assessments

Teaching Language *(2000 characters)*

French or English

Teaching methods *(500 characters)*

Cliquez ou appuyez ici pour entrer du texte.

Number of hours per course type: *(2000 characters)*

CM : 18h
TD :
TP : 2h
P R:
CONF.:
Autres:

Evaluation *(200 characters)*

Two-hour written examination.

Bibliography

Bibliography *(2000 characters)*

J.W. MARTIN, R.D. DOHERTY, Stability of microstructure in metallic systems, Cambridge University Press, London,1976 , ISBN 0.521.20875.0.
D.A. PORTER, K.E.EASTERLING, Phase transformations in metals and alloys, Taylor et Francis Group, 2004, ISBN
0.7487.5741.4.
V.RANDLE, O.ENGLER, Introduction to texture analysis : macrotexture, microtexture and orientation mapping, Gordon and Breach ed., 2000.
F.J.HUMPHREYS, M.HATHERLY, Recrystallization and Related Annealing Phenomena, Pergamon ed., 2004.

Contacts

Contacts *(2000 characters)*

GLORIANT Thierry

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name : Carbon Nanotubes	Code EC : GPM09-NANO
Number of hours per student : 9h	ECTS Number : 1
Reference Teacher : GUEZO Maud	

Generalities

Objectives *(2000 characters)*

Acquire basic notions of the original properties (structural, electronic and optical) of carbon-based nanomaterials, such as carbon nanotubes (CNTs) and graphene, flagship materials of nanotechnologies. Discover current and future research and applications on CNTs and graphene. Work on a nano-project on CNTs or graphene and present the content in class (in a group).

Description *(2000 characters)*

Part 1: Carbon nanotubes I. Introduction to element C (diamond, graphite, nanotubes (NT), fullerene) II. History of NTC III. CNT manufacturing techniques IV. Structural and electronic properties of CNTs V. Optical properties of CNTs VI. Applications VII. Other NT: BN, SiC, Si Part 2: Graphene I. Reminders on the properties of graphite II. Reminders on the electronic properties of graphene III. The 3 particularities of graphene IV. Manufacturing techniques V. Properties and applications VI. The challenge taken up by Europe “Graphene EU Flagship” VII. Integration of nanomaterials on an industrial scale thanks to graphene VIII. “Graphene and beyond graphene”: 2D nanomaterials and 2D heterostructures.

Requirements *(2000 characters)*

Basic knowledge on semiconductors properties (3rd and 4rth year of INSA-GPM) Basic knowledge on structural analysis. Basic knowledge on X-ray scattering and reciprocal space.

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

Courses

Number of hours per course type: *(2000 characters)*

CM : 9h
TD :
TP :
PR :
CONF :
Autres :

Evaluation *(200 characters)*

One hour written examination

Bibliography

Bibliography *(2000 characters)*

- "Carbon nanotubes and related structures", Peter J.F. Harris.- "Physical properties of carbon nanotubes", Dresselhaus, Dresselhaus, Saito.- "Etude des propriétés optiques des nanotubes de carbone", J.-S. Lauret, thèse de doctorat de l'Université ParisVI, Décembre2003.- "Physique de l'état solide", Charles Kittel, 8e édition :nouveau chapitre sur les nanostructures (1D et 0D).

Contacts

Contacts *(2000 characters)*

GUEZO Maud

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name : Nonlinear Optics	Code EC : GPM09-ONL
Number of hours per student : 12h	ECTS Number : 1.5
Reference Teacher : PIRON Rozenn	

Generalities

Objectives *(2000 characters)*

This course explores nonlinear optics, along with its major developments and key applications. Knowledge of nonlinear optics is essential for understanding optical telecommunications, optical information processing, and photonic components.

Description *(2000 characters)*

- Introduction to nonlinear optics: Physical origin of nonlinear optics. Requirements on materials. Local electric field impact. Nonlinear wave equation (light propagation in nonlinear medium). Presentation of nonlinear optical effects.
- Second-order nonlinear optics: Second-harmonic generation. Electro-optic effect. Three-wave mixing. Optical parametric amplification and oscillation.
- Third-order nonlinear optics: Third-harmonic generation. Optical phase conjugation. Optical bistability. Kerr effect.Self-focusing, self-phase modulation. Solitons.
- Organic materials for nonlinear optics applications.
- A brief presentation of the relevance of nonlinear optics for biology: an introduction to multiphoton microscopy and its applications in the biological sciences.

Requirements *(2000 characters)*

Electromagnetism, anisotropic media, optics.

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

Courses.

Number of hours per course type: *(2000 characters)*

CM : 12h
TD :
TP :
PR :
CONF :
Autres :

Evaluation *(200 characters)*

a 1 hour 30 minutes written exam.

Bibliography

Bibliography *(2000 characters)*

1. Optique non-linéaire : F. Sanchez - éditions Ellipse, Grenoble 1999.
2. Nonlinear Optics: R.W. Boyd - Academic Press 1992
3. Fundamentals of Photonics: B.E.A. Saleh, M.C. Teich - Wiley Interscience 1991
4. Nonlinear Optics: N. Bloembergen- WA Benjamin, New-York 1965
5. Optical Waves in Crystals, A. Yariv, P. Yeh, John Wiley et Sons 1983
6. Quantum electronics, A. Yariv, John Wiley et Sons 1975

Contacts

Contacts *(2000 characters)*

Rozenn PIRON

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: OPTOELECTRONICS	**Code EC: GPM09-OPTO**
Number of hours per student: 27 h	**ECTS Number: 2.5**
Reference Teacher: PERRIN Mathieu & FOLLIOT Hervé	

Generalities

Objectives *(2000 characters)*

Complete the basic knowledge of solid state physics concerning the optical properties of semiconductors. Describe the operating principles of semiconductor optoelectronic devices (photodetectors, LEDs, lasers and optical amplifiers).

Description *(2000 characters)*

The course is divided into 5 parts:
I. Introduction and reminders (light-semiconductor interaction)
II. Radiation detectors (devices, signal and noise)
III. Radiation emitters (LEDs, amplifiers and lasers, spectra and physical quantities)
IV. Applications and markets
V. Manufacturing processes for materials and components (focus on reliability).

Requirements *(2000 characters)*

Basic knowledge of solid state physics, quantum mechanics (3GPM) and semiconductor device physics.

Course requirements and assessments

Teaching Language *(2000 characters)*

French or English

Teaching methods *(500 characters)*

Lectures and tutorials

Number of hours per course type: *(2000 characters)*

CM: 14h
TD: 13h
TP:
PR:
CONF:
Autres:

Evaluation *(200 characters)*

2 hours written examination

Bibliography

- Optoélectronique, E. ROSENCHER, B. VINTER, Masson 1998.

- Fundamentals of semiconductors, P. YU, M. CARDONA, Springer 1996.

Contacts

Reference Teacher: PERRIN Mathieu & FOLLIOT Hervé

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name : INDUSTRIAL PROJECTS	Code EC : GPM09-PI
Number of hours per student : 64 h	ECTS Number : 3
Reference Teacher : PERRIN Mathieu	

Generalities

Objectives *(2000 characters)*

This course gives the students the opportunity to work in great autonomy on the basis of a specification proposed by industrial companies. The objective is to capitalize on the knowledge and know-how acquired during the training to tackle an open problem, with the ability to explain the method used.
At the end of this project, the students will have
- Answered a real industrial need, at the level of those treated by engineering consulting companies;
- Implemented a project management (anticipation of the work to be provided, management of deadlines and resources);
- Collaborated together as efficiently as possible.

The ability to develop a good team dynamic is an important learning outcome, as each member can create the commitment of others to the project. It is also important to be able to mobilize the expertise of the teachers supervising the project. These teachers are committed to the success of the project, as they are the representatives of INSA's seriousness towards the company.

Description *(2000 characters)*

In addition to the personal work and exchanges with the teachers, several steps are planned
- General presentation and choice of subjects, constitution of teams
- Detailed presentation of the subject in the presence of the industrial requester
- Drafting of a project guidelines document
- Presentation of teamwork tools for project management (Trello, Kanban)
- Mid-term progress review
- Final defense, presentation of deliverables in the presence of the industrial requester.

Requirements *(2000 characters)*

Common sense, method and energy.

Course requirements and assessments

Teaching Language *(2000 characters)*

French or English (project)

Teaching methods *(500 characters)*

Cliquez ou appuyez ici pour entrer du texte.

Number of hours per course type: *(2000 characters)*

CM: 8h
TD :
TP :
PR : 56h
CONF. :
Autres : 56h

Evaluation *(200 characters)*

The evaluation at the end of the project is based on the delivery of three deliverables to the whole jury
• a report, at least one week before the oral presentation date
• all the computer files developed during the project (intermediate reports, PowerPoint presentations, measurement files, CAD, plans, etc.);
• the oral presentation itself.

Bibliography

Bibliography *(2000 characters)*

Cliquez ou appuyez ici pour entrer du texte.

Contacts

Contacts *(2000 characters)*

Mathieu PERRIN

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name : Searching and analysing patents	Code EC : GPM09-SAP
Number of hours per student : 15h	ECTS Number : 2
Reference Teacher : PERRIN Mathieu	

Generalities

Objectives *(2000 characters)*

The purpose of the project is to grasp the basics of patents and work in pairs on a particular topic to learn how to search and analyse patents. The technical field of the patent under study will relate to microelectronics, semiconductor materials, and/or measurement systems, although other topics may be investigated if desired. The project will require a good understanding of the patent documents, patent family structures, scope of protection, etc., as well as a good command of the search tools and other on-line resources to analyse various aspects of a patent. A technical understanding of the invention and of the prior art cited during the granting procedure is also expected to assess the patent scope and strength. Each group will have to collect the necessary documentation to make a presentation of the project in front of the class at the last session. This course will provide the opportunity for students to demonstrate independence and creativity, and their ability to leverage their formation to tackle new problems involving various aspects (legal, technical, strategical, etc.).

Description *(2000 characters)*

Session 1: We will introduce the concept of patent, with a focus on the patent system (patent offices in the world, key features, statistics), the granting procedures, patentability criteria (novelty, inventive step), patent documentation, scope/duration of protection. We will also discuss the free on-line patent tools and resources to search for and analyse patents (build a search strategy, analyse status, scope, strength, etc. of patents). Groups will be formed and the broad technical topic chosen. Typical topics can be in the fields of (micro)electronics, semiconductor materials, and/or measurement systems, but other topics may be chosen by mutual agreement.
- Session 2: For this meeting, students are expected to have found at least one patent and start reviewing its content. We will put into practice the main notions presented in session 1 on exemplary cases to train how to analyse various aspects of a patent and related family (searches patents, use tools to understand patent family, patent scope, etc.). The goal is to introduce methods of patent search/analysis based on real cases so that each group can then apply them on their project.
- Session 3 (not scheduled): Each team of two students will meet and discuss their project individually with their tutor.
- Session 4: Final presentation of their work by each group, followed by a question-answer session.

Requirements *(2000 characters)*

Cliquez ou appuyez ici pour entrer du texte.

Course requirements and assessments

Teaching Language *(2000 characters)*

English

Teaching methods *(500 characters)*

A total personal work of 12h is expected from students during the course of the semester. This amounts roughly to 1h30 per week.

Number of hours per course type: *(2000 characters)*

CM :
TD :
TP :
PR : 15h
CONF :
Autres :

Evaluation *(200 characters)*

The oral defence at the end constitutes the evaluation of the course.

Bibliography

Bibliography *(2000 characters)*

Cliquez ou appuyez ici pour entrer du texte.

Contacts

Contacts *(2000 characters)*

PERRIN Mathieu

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name : Assemblies Engineering : welding and non Destructives testing	Code EC : GPM09-SCND
Number of hours per student : 28h	ECTS Number : 2
Reference Teacher : KOUADRI DAVID Afia	

Generalities

Objectives *(2000 characters)*

This course is shared with GMA department for 8h lecture + 8h practical work.
Contact for GMA : Afia KOUADRI DAVID.

The first aim of this course is to tackle metallurgy through a widespread technique of assembly welding of metallic alloys. An important point is to understand what kind of microstructure changes during the treatment because those transformations have mechanical consequences on the final assembly. Due to the high speed of cooling or heating during the welding process, the metallurgical changes take place out of equilibrium.
The second aim of this courses is to describe the most commonly used techniques of non destructive testing.

Description *(2000 characters)*

Introduction: definitions of welding and weldability, concepts of autogenic, homogeneous and heterogeneous welding.
List of welding process.
The welded joint: constitution, elaboration of the fusion zone, solidification structures, structure changes in the heat-affected zone, consequences of the thermal cycles, defects forming.
Welding defects: classification, origins/consequences of faults, remedies to the various troubles encountered.
Control of welded joints.
Introduction to non-destructive testing methods.
Detailed process: visual inspection, liquid penetrant testing, magnetic particle, eddy current testing, ultrasonic, radiographic.

Requirements *(2000 characters)*

General metallurgy, materials microstructures, mechanical properties of metallic alloys.

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

Personal work: 15 hours

Number of hours per course type: *(2000 characters)*

CM : 20h
TD :
TP : 8h
PR :
CONF :
Autres :

Evaluation *(200 characters)*

1 written exam, duration : 2h.

Bibliography

Bibliography *(2000 characters)*

Métallurgie et mécanique du soudage, Régis Blondeau (Hermès Sciences Publications).
Procédés et applications industrielles du soudage, Régis Blondeau (Hermès Sciences Publications).
Techniques de l¿ingénieur (B7720, B7730, B7740).
Termes et définitions utilisés en soudage et techniques connexes, les Publications de la Soudure Autogène et le Conseil International de la Langue Française.
Le contrôle non destructif par ultrasons, Jean Perdijon (Traité des Nouvelles Technologies, série Matériaux, ed.HERMES, 1993)
Les contrôles non destructifs, A. Lambert (Cahiers de formation du CETIM, 1993)
Ultrasons, A. Lambert (Cahiers de formation du CETIM, 1995)
Practical Non-Destructive Testing, B.Raj, T.Jayakumar, M. Thavasimuthu, (Alpha Science International Ltd., Oxford UK, 2007).

Contacts

Contacts *(2000 characters)*

KOUADRI Afia

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: QUANTUM TECHNOLOGIES	**Code EC: GPM09-TQUA**
Number of hours per student: 12	**ECTS Number : 1.5**
Reference Teacher : HUILLERY Paul	

Generalities

Objectives *(2000 characters)*

Quantum technologies are nowadays a rapidly growing field which has the ambition to bring breakthrough technological solutions to high performance computing, secure communications and sensing.
The aim of the module is to introduce the key concepts linked to quantum technologies, allowing to understand their current impact and implementation challenges. By reducing the use of quantum mechanics formalism down to its essential bits, the module emphasis on the physical concepts that are essential to understand quantum technologies and on the physical platforms that are used for their implementations.

Description *(2000 characters)*

- Introduction to quantum technologies : Quantum technologies 2.0 ; scientific, technological and societal contexts.
- Key concepts in quantum mechanics : wave-particle duality, wave function, quantification and quantum states.
- The Qubit : 2-level quantum systems, Bloch sphere, coherent control, decoherence, coupling, physical platforms.
- Quantum information and quantum sensing

Requirements *(2000 characters)*

Basis in quantum mechanics. Algebra (matrices). Differential equations (1st order). Undergrade Physics.

Course requirements and assessments

Teaching Language *(2000 characters)*

French or English

Teaching methods *(500 characters)*

Lectures, personal work (about 1h per 1h of lecture), group work.

Number of hours per course type: *(2000 characters)*

CM : 12 h
TD :
TP :
P R:
CONF:
Autres :

Evaluation *(200 characters)*

- 25% Oral Presentation of a bibliographic project (in small group, to give during the module)
- 25% Report on a numerical project (in small group, written report to give at the end of the module)
- 50 % Written exam (questions on research articles), 1h30

Bibliography

Bibliography *(2000 characters)*

Lectures notes

Contacts

Contacts *(2000 characters)*

HUILLERY Paul: paul.huillery@insa-rennes.fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Nom de la matière : Allemand	**Code EC: EC-HUMF09-ALL**
Volume horaire total par étudiant: 21heures	**Nombre crédits ECTS :**
	1,5 ECTS
Responsable(s) : Cecile Hölzner-Jacques	

Généralités

Objectives, aims *(2000 caracters)*

Targeted skills:
Mastering a foreign language
Ability to communicate/progress/work in an international and intercultural context
Cultural openness
Communicating/interacting with others, working in a team
Working autonomously
German Level A1: Acquiring the basics of the German language. Be able to understand and hold a simple conversation about everyday life.
German Level A2-B1: Be able to communicate in German, acquire intercultural skills, demonstrate cultural openness. Work in a group on a project, speak up.
German Level B2/C1: Work in a group on a project, speak up, communicate in German, acquire intercultural skills, acquire basic scientific and technical vocabulary. Ask questions, become a responsible engineer, think about the world of tomorrow in an international context.

Description *(2000 caracters)*

Practising written and oral comprehension. Developing oral expression through exercises in small groups and whole-class discussions. Acquire everyday German vocabulary for daily life and professional life.
German Level A2-B1: Grammar revision, consolidate knowledge. Practise reading and listening comprehension using multimedia resources. Develop oral expression skills through small group exercises, presentations or whole class discussions. Prepare students to progress independently in languages. Preparing mobility.
German B2-C1: Practise reading and listening comprehension using multimedia resources. Acquire technical and scientific German vocabulary. Develop oral expression skills through small group exercises, presentations or whole class discussions. Use and improve German language skills in the context of a project. Preparing mobility.

Pré-requis *(2000 caractères)*

German Level A1: none

German Level A2-B1: mastery of the basics of German (A2), second foreign language at secondary school (B1)

German B2-C1: good language skills, first foreign language or bilingual class at secondary school, ABIBAC

Modalités du cours et des évaluations

Langue d'enseignement *(2000 caractères)*

Cliquez ou appuyez ici pour entrer du texte.

Modalités d'enseignement *(500 caractères)*

1.5–2 hours of classes per week.
IAutonomous study time: 14-16 hours Total: 35 hours. Students are encouraged to read German newspapers regularly and watch videos, series and films, in addition to the work assigned between sessions.

Volume horaire par type de cours : *(2000 caractères)*

CM :
TD : 19 hours for the first cycle, 21 hours for the second cycle.
TP :
PR :
CONF :
Autres :
Autonomous study time: 14-16 hours
7 hours of optional project work in the second cycle

Modalités d'évaluation / coefficient *(200 caractères)*

Continuous assessment, oral examination

Bibliographie

Bibliographie *(2000 caractères)*

MOODLE course page
Deutsch für Ingenieure, Maria Steinmetz/Heiner Dintera, VDI/Springer Vieweg, 2014
Deutsch Perfekt, periodical
online: Deutsche Welle, ARD, Der Spiegel, FAZ, die Zeit, das Handelsblatt, VDI (Verein Deutscher Ingenieure), Nachrichten, ZDF Logo
French-German dictionary le visuel, Editions de la Martinière
Übungsgrammatik für die Mittelstufe Hueber-Verlag
Na also! Waltraud Legros, Ellipses
multimedia resources

Contacts

Contacts *(2000 caractères)*

Cecile Hölzner-Jacques : cecile.holzner-jacques@insa-rennes.fr

Autres

Autres informations

Cliquez ou appuyez ici pour entrer du texte.

Subject name: ANGLAIS / TOEIC	Code EC: EC-HUM09-ANGL-TOEIC
Number of hours per student: 20 h	ECTS Number: 1.5
Reference Teacher: Philippe LE VOT	

Generalities

Objectives *(2000 characters)*

Improving communication skills in everyday life situations as well as in company and business context.
Obtaining or reinforcing the B2 level requested by the CTI.
Obtaining 800 score at the final TOEIC test.

Description *(2000 characters)*

Learning by doing : students will have to be able to speak and listen, write a document while showing they can solve problems, reason, convince and demonstrate in an articulate manner.
Expressing oneself accurately and fluently : students will engage in activities requiring creative and reactive skills such as debates, role-plays, individual oral Power Point presentations, projects, based on scientific topics and current events.

Requirements *(2000 characters)*

Not having already taken and passed the TOEIC test during the previous two years
B1/B2 level advised

Course requirements and assessments

Teaching Language *(2000 characters)*

Teaching methods *(500 characters)*

Each class lasts two hours and most classrooms are equipped with video and audio. A multimedia lab and computer rooms are also available for the students to work in a stimulating environment.

Teaching resources include press articles, audio and video documents (TV reports, extracts from films and series)as well as the Internet. B2 level tests are also taken throughout the course.

Number of hours per course type: *(2000 characters)*

CM:
TD: 20 heures
TP:
PR:
CONF:
Autres:

Evaluation *(200 characters)*

Final mark based on : TOEIC score at final exam + attendance (more than 4 non justified absences result in 0/20 mark).

Bibliography

Bibliography *(2000 characters)*

English grammar in Use, Intermediate Edition (CUP)
Robert and Collins bilingual dictionary or Collins Cobuild

Contacts

Contacts *(2000 characters)*

Other information

Other information

5th year students who haven't already passed their TOEIC

INSA RENNES : 2025/2026

Course Name: ENGLISH

Course Code: EC-HUM09-ANGL-CONV

Total Student Workload: 10 hours

ECTS Credits: 1.5

Instructor(s): Philippe Le Vot

General Information

This course is intended for 5th-year students who have already obtained their TOEIC certification (B2 level required by the CTI). At the start of the module, students choose between two options:

• ECIU Courses (European online university). These allow students to register for courses delivered by our European university partners and compare different approaches to engineering.

• Audio or video project/challenge (production of an individual or group final product), based on a common theme that changes every year.

Description

The courses offered on the ECIU European platform cover a very wide range of specialities and allow our students to participate in micro-challenges, take courses taught by a European network of partner universities, and compare perspectives on the engineering world.

Prerequisites

• A strong command of the 3rd- and 4th-year English curriculum is required.

Teaching and Assessment Methods

Language of Instruction: English

Teaching Method: Self-directed learning. Students choose a module and validate it with the European university offering the course. This is carried out under the supervision and in collaboration with the internal ECIU team at INSA Rennes.

Course Type and Hours:

Tutorials (TD): 10 hours

Assessment:

The final grade is the grade awarded by the institution responsible for the selected module.

Bibliography

Only reference:

https://www.eciu.eu/

Contacts

plevot@insa-rennes.fr

Ellea.Lhermite@insa-rennes.fr (ECIU support at INSA)

INSA RENNES : 2025/2026

Course Name: ENGLISH

Course Code: EC-HUM09-ANGL-CONV

Total Student Workload: 10 hours

ECTS Credits: 1.5

Instructor(s): Philippe Le Vot

General Information

This course is intended for 5th-year students who have already obtained their TOEIC certification (B2 level required by the CTI). At the start of the module, students choose between two options:

• ECIU Courses (European online university). These allow students to register for courses delivered by our European university partners and compare different approaches to engineering.

• Audio or video project/challenge (production of an individual or group final product), based on a common theme that changes every year.

Description

The courses offered on the ECIU European platform cover a very wide range of specialities and allow our students to participate in micro-challenges, take courses taught by a European network of partner universities, and compare perspectives on the engineering world.

Prerequisites

• A strong command of the 3rd- and 4th-year English curriculum is required.

Teaching and Assessment Methods

Language of Instruction: English

Teaching Method: Self-directed learning. Students choose a module and validate it with the European university offering the course. This is carried out under the supervision and in collaboration with the internal ECIU team at INSA Rennes.

Course Type and Hours:

Tutorials (TD): 10 hours

Assessment:

The final grade is the grade awarded by the institution responsible for the selected module.

Bibliography

Only reference:

https://www.eciu.eu/

Contacts

plevot@insa-rennes.fr

Ellea.Lhermite@insa-rennes.fr (ECIU support at INSA)

Subject name: CHINESE LV2-LV3	**Code EC: EC-HUMF09-CHI**
Number of hours per student: 21 hours	**ECTS Number: 1,5**
Reference Teacher: Cécile Hölzner-Jacques	

Generalities

Objectives *(2000 characters)*

Targeted skills:

- Mastering a foreign language
- Ability to communicate/develop/work in an international and intercultural context
- Cultural openness
- Communicating/interacting with others, working in a team
- Working independently
- Acquiring the basics of the Chinese language, essential structures and vocabulary
- Comprehension, expression, pronunciation
- Using the language in everyday contexts.

Description *(2000 characters)*

Oral skills:
Corrective phonetics (pinyin system),
Listening to and analysing simple texts and complex sentences,
Oral exercises (learners with each other / learners with teacher)
Learning new characters (pronunciation and tone accentuation).

Written skills:
Theme/version
Written production of simple texts and complex sentences,
Learning and reinforcement of grammatical mechanisms and vocabulary for oral and written production,
Learning new characters (stroke order, keys),
Reading and analysis of texts, commentary on texts.

Requirements *(2000 characters)*

Chinese 1: None
Chinese 2: Completion of Chinese 1
Chinese 3: Completion of Chinese 2

Course requirements and assessments

Teaching Language *(2000 characters)*

Teaching methods *(500 characters)*

Reading lesson texts (in characters), rewriting new characters, exercises applying grammar points, lexical and morphological points, theme and version exercises...

Number of hours per course type: *(2000 characters)*

CM:
TD: 1h30
TP:
PR:
CONF:
Autres:

Evaluation *(200 characters)*

S1: Final mark
S2: Oral examination

Bibliography

Bibliography *(2000 characters)*

1. Chinese as spoken in China, Bernard Allanic, Presses Universitaires de Rennes, 2009
2. Contemporary Chinese, WU Zhongwei, Sinolingua, 2010
3. Experiencing Chinese, ZHANG Rumei, AI Xin, Higher Education Press, 2006
Chinese Language Method (Second Level), Zhitang Yang-Drocourt - Liu Hong – Fan Jianmin
Short Stories for Learning Mandarin Chinese, Zhang Xiaoli, 2025
Standard Course HSK Workbook, Jiang Liping
Other tools will complement these basic textbooks to provide students with a wide range of practical exercises.

Contacts

Contacts *(2000 characters)*

Other information

Other information

Learning Chinese isn't just about tones and characters. It's about connection — to a culture, to people, and to the stories that make language come alive.

Subject name: French foreign language	**Code EC: EC-HUMF09-FLE**
Number of hours per student: 21 hours (or 2 x 21 hours for the Exchange programme)	**ECTS Number: 1,5**
	3 credits for the Exchange
Reference Teacher: FOURE Dominique	

Generalities

Objectives *(2000 characters)*

The various activities in the FLE and FOS (French for Specific Purposes) programme aim to develop optimal language proficiency and the use of language as a cultural and intercultural vehicle, a tool for work and communication adapted to the context. Students will develop their autonomy through group work and individual work.
Targeted skills/humanities (SHS): ▪ Knowing oneself, managing oneself physically and mentally▪ Working, learning and developing independently▪ Interacting with others, working in a team▪ Demonstrating creativity, innovation and initiative▪ Acting responsibly in a complex world▪ Developing in a professional and social environment▪ Working in an international and intercultural
context

Description *(2000 characters)*

Level A1/A2
1- Language, culture and communication: Help learners feel comfortable in all everyday situations. Language learning is organised around observing how the language works, practising a variety of activities in class and carrying out projects in real or simulated contexts to promote autonomy.

2- Scientific and academic French: Facilitate integration into scientific studies, student life and social life.

Level B1/B2
1- Language, culture and communication: Help learners express themselves fluently in writing and orally on a wide range of general and specialised topics.
Key themes: Studying and living in France/ Understanding and exercising critical thinking in various fields: current affairs/history/art/science and technology, urban planning, the environment, etc.
Social sciences and humanities: socio-ecological transition, business and innovation.

2- Preparation for DELFB2 or DALFC1, compulsory French language diploma required to obtain an engineering degree**.**

Level B2/C1
1- Interculturality - Study of European and international current affairs and in-depth exploration of issues related to SHS
- Communicate and interact
- Decode intercultural references in speech, attitudes and behaviour
- Put one's values, beliefs and behaviour into perspective
- Integrate cultural diversity into group work

2- Professional French
- Prepare effectively for finding an internship or job
- Understand complex issues within the company
- Master societal, political, economic, environmental, ethical and philosophical aspects, etc.
- Act responsibly in the professional world

Requirements *(2000 characters)*

None
Courses range from beginner to advanced levels.
Each student will be placed in a group corresponding to their level and needs
- based on a test at the beginning of the year for new entrants
- based on the level acquired and assessed the previous year for existing students

Course requirements and assessments

Teaching Language *(2000 characters)*

Learners are trained and assessed on the five skills recognised by the Common European Framework of Reference for Languages (CEFR).

Teaching methods *(500 characters)*

Language, communication and intercultural skills are tailored to the target level and the needs of the group (indicated in the group code).

Number of hours per course type: *(2000 characters)*

CM:
TD:
TP:
PR:
CONF:
Autres:

Evaluation *(200 characters)*

Continuous assessment in line with the skills to be validated: CE, CO, PE, PO
INSA student programme: 21 hours/semester (1.5 credits)
Exchange programme: Students studying for a semester at INSA Rennes have the opportunity to obtain a total of 4 credits
- 1 Language Project (7 hours/semester) = 1 ECTS
- 2 FLE courses (2X21 hours/semester) e.g. Language, Culture and Communication + Interculturality

Bibliography

Bibliography *(2000 characters)*

Materials selected by the teacher based on the level and objectives to be achieved

Contacts

Contacts *(2000 characters)*

Dominique.foure@insa-rennes.fr

Other information

Other information

https://fle.insa-rennes.fr/

Subject name: ITALIAN LV2-LV3	**Code EC: EC-HUMF09-ITA**
Number of hours per student: 21h	**ECTS Number: 1,5**
Reference Teacher: Cécile HÖLZNER-JACQUES	

Generalities

Objectives *(2000 characters)*

Targeted skills:
Mastering a foreign language
Ability to communicate/develop/work in an international and intercultural context
Cultural openness
Communicating/interacting with others, working in a team
Working independently

Level 1 beginner: Introducing Italian language and culture, expressing ideas in writing and orally.
Level 2 advanced beginner: By the end of the course, students should be able to converse and write in Italian.
Level 3 intermediate: Give students the opportunity to explore topics related to art, civilisation, literature and cinema in greater depth.

Description *(2000 characters)*

Oral expression and comprehension: reading the course material with phonetic and grammatical corrections with the teacher, reading the situations found in the text, watching films and reading literary texts and press articles.
Written expression and comprehension: doing the exercises in the text with particular attention to difficulties, summarising the situations without the text available and the films studied.

Requirements *(2000 characters)*

Beginner level: none.
Advanced beginner level A2: must have attended the beginner Italian course.
Intermediate level B1/advanced level B2: must have a good knowledge of the Italian language.

Course requirements and assessments

Teaching Language *(2000 characters)*

Italian language

Teaching methods *(500 characters)*

The course will cover:.
Grammar concepts;.
Exercises to understand basic linguistic mechanisms;.
Building vocabulary using keywords and translations;.
Presentations and discussions on given topics;.
Asking questions and knowing how to respond;.
Creating dialogues, stories, and discussions based on given keywords;
(All of this will be adapted to the average level of the course.)

1.5 hours of face-to-face lessons per week, 21 hours per semester.
Personal work: 14 hours Read the texts provided in the handouts; 7 hours create a dialogue or short story using the keywords provided and express yourself with them.

Number of hours per course type: *(2000 characters)*

CM:
TD: 21h
TP:
PR:
CONF:
Autres:

Evaluation *(200 characters)*

S1: Final mark
S2: Oral examination

Bibliography

Bibliography *(2000 characters)*

Loesher Archivio di Grammatica, https://italianoperstranieri.loescher.it/archivio-di-grammatica

Harraps, Italian Express Method, Vittoria Bowles and Paul Coggle

Texts taken from Italian novels, poems, essays, daily and weekly newspapers, and films by famous directors

Contacts

Contacts *(2000 characters)*

Paolo Procesi: Paolo.Procesi@insa-rennes.fr

Other information

Other information

Subject name: Japanese	**Code EC: EC-HUMF09-JAP**
Number of hours per student:	**ECTS Number: 1.5**
Reference Teacher: Cécile Hölzner-Jacques	

Generalities

Objectives *(2000 characters)*

Targeted skills:

Mastering a foreign language
Ability to communicate/develop/work in an international and intercultural context
Cultural openness
Communicating/interacting with others, working in a team
Working independently

Beginner level (A1):

-Awareness of specific features (phonetics, syntax)
-Discovering Japanese culture, traditions and customs
-Learning two writing systems (Hiragana and Katakana)
-Mastering spoken Japanese in everyday situations.

Intermediate level (A2):

- Introduction to ideograms (30-60 kanji)
- Reading simple texts (using manga, etc.)
- Writing simple texts
- Mastering spoken Japanese in everyday situations.

Advanced level (B1, B2):

- Learning kanji (60-200)
- Acquiring four skills (reading, listening, writing and speaking) for travelling and studying in Japan.

Description *(2000 characters)*

Description (2000 characters)
Level 1 beginner (A1):
- Improvement of Hiragana and Katakana
- Mastery of Japanese in everyday situations (Marugoto A1).
Lesson 3: Me_ Nice to meet you
Lesson 4: Me_ There are three of us in my family
Lesson 5: Food_ What kind of food do you like?
Lesson 6: Food_ Where shall we eat?
Lesson 7: The house_ It's a three-room flat
Lesson 8: The house_ What a beautiful room you have!

Lesson 9: Everyday life_ What time do you get up?
Lesson 10: Everyday life_ When are you available?
Level 2 Intermediate (A2):
- Continuation of the Marugoto textbook (Lessons 11 to 18)
- Learning new basic grammar points (past tense, potential tense, volitional tense, etc.)
- Improving and discovering new particles (で、に、から/まで, etc.)
- Discovering and learning 30-60 kanji
- Reading and writing simple texts
- Learning to communicate in everyday situations.

Intermediate level (B1, B2):

- Reading manga
- Acquiring four skills (reading and listening comprehension, writing and speaking).

Requirements *(2000 characters)*

Beginner level A1: none.
Beginner level A2: completion of beginner level A1.
Intermediate/advanced level: completion of beginner levels A1/A2.

Course requirements and assessments

Teaching Language *(2000 characters)*

Teaching methods *(500 characters)*

Teaching takes the form of tutorials. Each session consists of an explanation of concepts, which are then illustrated with examples and conversation exercises in which the students participate.

Number of hours per course type: *(2000 characters)*

CM:
TD:21h
TP:
PR:
CONF:
Autres:

Evaluation *(200 characters)*

A1
S1 and S2: Final mark

A2 and B1
S1: Final mark
S2: Oral examination

Bibliography

Bibliography *(2000 characters)*

Level 1 beginner (A1): Margoto A1, Japan Foundation, 2013, Japan.

Level 2 beginner (A2): Margoto A2, Japan Foundation, 2014, Japan.

Contacts

Contacts *(2000 characters)*

Other information

Other information

Subject name: Intercultural Modul	**Code EC: EC-HUMF09-LV2-OI**
Number of hours per student: 21h par semestre	**ECTS Number: 1.5**
Reference Teacher: Cécile Hölzner-Jacques	

Generalities

Objectives *(2000 characters)*

The course aims to develop students' fluency in both written and spoken communication while fostering philosophical reflection. It not only enhances reading, listening, and expressive skills but also cultivates critical thinking and confident public speaking. Particular emphasis is placed on rigorous reasoning, clear argumentation, and the ability to connect philosophical inquiry with linguistic precision.

Description *(2000 characters)*

Each semester is devoted to a specific philosophical concept. For the first semester of 2025, the theme is *violence*.
The course is divided into two distinct parts. The first part focuses on language development. Each session begins with a warm-up activity designed to encourage oral participation and group interaction. Students engage in creative writing exercises — such as recounting a memory or imagining a story — to stimulate imagination and improve expressive skills. Regular reading of newspaper articles helps strengthen reading comprehension, pronunciation, and vocabulary.
The second part of the course is dedicated to project work, which constitutes the final graded assignment. Through these projects, students synthesize language practice and philosophical reflection, applying both to a concrete and personally meaningful topic.

Requirements *(2000 characters)*

Students should be able to express themselves in English with a reasonable degree of confidence. Mistakes in grammar or pronunciation are not a problem, but a solid foundation in vocabulary and basic grammar is necessary to follow the course. The class usually includes both bilingual students and others with more limited proficiency, so the activities are designed to allow everyone to participate meaningfully and progress at their own pace.

Course requirements and assessments

Teaching Language *(2000 characters)*

The course is conducted primarily in English, although French may occasionally be used for clarification or discussion when necessary.

Teaching methods *(500 characters)*

This is not a traditional lecture-based course but an interactive class built around students 'interests. It is designed as a space for expression and reflection. Written and video materials are regularly used, and students are encouraged to take an active role through role-playing activities and short theatrical performances.

Number of hours per course type: *(2000 characters)*

CM:
TD: 20 h par semestre
TP:
PR:
CONF:
Autres:

Evaluation *(200 characters)*

Assessment is based on attendance and participation, but mainly on a creative end-of-term project demonstrating linguistic skills and critical thinking, completed individually or in groups

Bibliography

Bibliography *(2000 characters)*

Books

Camus, Albert. *The Stranger*. Translated by Stuart Gilbert. New York: Vintage Books, 1942.
Dostoevsky, Fyodor. *Crime and Punishment*. Translated by Constance Garnett. New York: Modern Library, 1866.
Flock, Elizabeth. *The Furies: Women, Vengeance, and Justice*. New York: Harper, 2024.
Malm, Andreas. *How to Blow Up a Pipeline: Learning to Fight in a World on Fire*. London: Verso Books, 2021.
Manne, Kate. *Down Girl: The Logic of Misogyny*. Oxford: Oxford University Press, 2017.
Motz, Anna. *If Love Could Kill: The Myths and Truths of the Women Who Commit Violence*. New York: Knopf, 2024.
Thoreau, Henry David. *Civil Disobedience*. Boston: David R. Godine, 1849.
Zinn, Howard. *A People's History of the United States*. New York: Harper & Row, 1980.

Articles and Essays

King, Martin Luther, Jr. "Letter from Birmingham Jail." April 16, 1963.
Schwartz, Alexandra. "When Women Commit Violence." *The New Yorker*, 2024.
Zinn, Howard. "The Problem is Civil Obedience." Speech delivered at Johns Hopkins University, Baltimore, November 1970.

Films and Television

Bong Joon-ho, dir. *Parasite*. Seoul: Barunson E&A, 2019.
Coen, Joel, and Ethan Coen, dirs. *Fargo*. Los Angeles: PolyGram Filmed Entertainment, 1996.
Coen, Joel, and Ethan Coen, dirs. *No Country for Old Men*. Los Angeles: Miramax Films, 2007.
Demme, Jonathan, dir. *The Silence of the Lambs*. Los Angeles: Orion Pictures, 1991.
Fincher, David, dir. *Gone Girl*. Los Angeles: 20th Century Fox, 2014.
Fincher, David, dir. *The Girl with the Dragon Tattoo*. Culver City: Columbia Pictures, 2011.
Fincher, David, dir. *Zodiac*. Los Angeles: Paramount Pictures, 2007.
Gilligan, Vince, creator. *Breaking Bad*. Los Angeles: AMC, 2008–2013.
Kelly, Richard, dir. *Donnie Darko*. Los Angeles: Newmarket Films, 2001.
Lanthimos, Yorgos, dir. *The Killing of a Sacred Deer*. London: A24, 2017.
Lynch, David, and Mark Frost, creators. *Twin Peaks*. Los Angeles: CBS Television Distribution, 1990–1991, 2017.
Martin, Steve, and John Hoffman, creators. *Only Murders in the Building*. Los Angeles: Hulu, 2021–.
Miller, George, dir. *Furiosa: A Mad Max Saga*. Burbank: Warner Bros., 2024.
Miller, George, dir. *Mad Max: Fury Road*. Burbank: Warner Bros., 2015.
Penhall, Joe, creator. *Mindhunter*. Los Gatos: Netflix, 2017–2019.
Pizzolatto, Nic, creator. *True Detective*. Los Angeles: HBO, 2014.
Tarantino, Quentin, dir. *Kill Bill: Vol. 1* and *Kill Bill: Vol. 2*. Los Angeles: Miramax Films, 2003–2004.
Wan, James, dir. *Saw*. Santa Monica: Lions Gate Films, 2004

Contacts

Contacts *(2000 characters)*

Other information

Other information