

Subject name: Resistance of Materials 2	Code EC: GMA07-RDM2
Number of hours per student : 50 hours	ECTS Number: 4
Reference Teacher: Eric RAGNEAU	

Generalities

Objectives

As an extension of the RdM I module of the 3rd year, this module aims to provide the necessary knowledge for the design of torsional beams, the study of hyperstatic beam systems, the modeling of thin plates in bending and the buckling of structures.

Description

- I. Study of hyperstatic beam systems
 - Definition of the degree of hyperstatism of a structure
 - Calculation of the elastic strain energy of a beam from the cohesion torsor
 - Application of energetic principles to calculate hyperstatic unknowns: theorems of Ménabréa, Castigliano and Bertrand de Fontviolant
- II. Torsion of the beams
 - Definition of the torsion center
 - Study of uniform torsion: general Saint Venant model, elementary theory and Bredt theory for the study of closed thin profile sections.
 - Study of non-uniform torsion: Vlassov's low-distortion theory
- III. Study of Thin Plates in Flexion
 - Reminder of the assumptions
 - Definition of cohesion torsors per unit of length
 - Equilibrium equation of the plate according to the Kirchhoff hypothesis
 - Elastic deformation energy of the plate
 - Solving the equilibrium equation by energy methods
- IV. Study of the stability of structures
 - Reminder of the basic assumptions to build a 2nd order model
 - Equilibrium equation of a beam in the 2nd geometric order: highlighting the risk of instability
 - Study of elastic buckling: Euler's critical force
 - Definition of the free length of buckling
 - Critical Slenderness and Practical Applications

Requirements

GMA05-MMC et GMA06-RdM1

Course requirements and assessments

Teaching Language

French

Teaching methods

The course is taught from a "fill-in-the-blank" document that students complete with the help of the teacher during the Course-Tutorial sessions.

The Tutorial and Practical Work sessions then allow students to implement the concepts and theories seen in the Course-Tutorial.

Number of hours per course type:

Course-Tutorial : 16 hours

Tutorial : 22 hours

Practical Work : 12 hours

Evaluation

A supervised assignment grade (coefficient 3) + a practical work grade (coefficient 1)

Bibliography**Bibliography**

M. KERGUIGNAS, G. CAIGNAERT : Résistance des Matériaux. DUNOD (1997).

M. ALBIGES : Résistance des Matériaux Appliquée. DUNOD.

J. COURBON : Résistance des Matériaux. DUNOD (1971).

Contacts**Contacts**

Eric RAGNEAU, Afia KOUADRI

Subject name: Computer - aided Mechanical Design	Code EC: GMA07-CMAO2
Number of hours per student: 42	ECTS Number: 4
Reference Teacher: Lionel LEOTOING	

Generalities

Objectives (2000 characters)

- Understand the different methods used to draw up functional specifications and propose technical solutions for product functions.
- Apply advanced design methodologies in CAD software.
- Evaluate the virtual suitability of a product with its specifications.
- Perform topological optimization and parametric shape optimization.
- Understand the principles of PLM.

Description (2000 characters)

- Integrated design
- Optimization techniques
- Functional analysis of requirements
- Integration of manufacturing process constraints
- Design in an assembly context
- Finite element simulation
- Topological optimization
- Parametric optimization
- Frequency analysis
- Thermal analysis

Requirements (2000 characters)

GMA05-ARSM
GMA06-DICM

Course requirements and assessments

Teaching Language (2000 characters)

French

Teaching methods (500 characters)

Introductory courses, learning Solidworks and Abaqus software through case studies (20 hours), synthesis project (12 hours), lecture given by an industry representative

Number of hours per course type: (2000 characters)

CM: 6

TD: 20

TP: 12

PR:

CONF: 4

Autres:

Evaluation (200 characters)

1 supervised 1-hour exam (weighted 1), project assessment (weighted 3)

Bibliography**Bibliography** (2000 characters)

Cliquez ou appuyez ici pour entrer du texte.

Contacts**Contacts** (2000 characters)

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Other information

Other information

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Subject name: Electrical and Electronics Engineering	Code EC: GMA07-EEP
Number of hours per student: 30h (CM: 10h, TD: 12h, TP: 8h)	ECTS Number: 2
Reference Teacher: Sylvain GUEGAN	

Generalities

Objectives (2000 characters)

Study of the fundamental concepts of electrical engineering to understand and manage electrical machines, their power supply methods, modeling, and control principles. The course also aims to guide students in selecting an appropriate drive system, including the motor, motion and drive controllers, gearhead, and other associated components.

Description (2000 characters)

- General overview of electrical machines: fundamental operating principles; presentation of the main types of electrical machines, their application domains, and current trends in industrial processes; general notions on construction, sizing, and materials; analysis of torque–speed characteristics of typical loads; consideration of thermal constraints and limits; review of electrical energy concepts and the physical principles governing machine operation.
- Direct current (DC) machines: principle and design; power range; study of no-load and loaded operation; commutation phenomena; power balance; speed control methods; transient modeling and transfer function representation; universal motors, servomotors, and special machines.
- Asynchronous (induction) machines: principle and design; concept of slip; winding connections; modeling, equivalent circuits, and electrical and mechanical characteristics; testing and power balance; control methods for starting and speed regulation; scalar and vector control approaches.
- Synchronous machines: principle and design; power balance; operation as alternators and motors; study of permanent magnet synchronous motors (PMSM or “brushless” motors); modeling, characteristics, and control methods; starting and transient behavior; servomotors, synchronous compensators.
- Stepper motors: principle and design; permanent magnet and hybrid stepper motors; control methods and performance characteristics; torque–speed curves; influence of the supply type on mechanical characteristics and field of application.

Requirements (2000 characters)

None.

Course requirements and assessments

Teaching Language (2000 characters)

French.

Teaching methods (500 characters)

Lectures, tutorials and practical lab sessions. Preparation required for tutorials and labs.

Number of hours per course type: (2000 characters)

CM: 10h

TD: 12h

TP: 8h

PR:

CONF:

Autres:

Evaluation (200 characters)

Graded lab work.

Final 2-hour written exam.

Final grade = (Lab grade + 3 × Exam grade) /4

Bibliography**Bibliography** (2000 characters)

R. MERAT et al., "Génie électrotechnique", Etapes références, Nathan, 1997.

G. GRELLET, G. CLERC, "Actionneurs électriques : principes - modèles - commandes", Eyrolles, 2000.

M. MARTY, D. DIXNEUF, D. GARCIA GILABERT, "Principes d'électrotechnique", Sciences Sup, Dunod, 2005.

Contacts**Contacts** (2000 characters)

Sylvain GUEGAN

Other information
<p><i>Other information</i></p> <p>Target audience: 4GMA</p>

Subject name: Numerical Methods and Finite Elements	Code EC: GMA07-MNEF
Number of hours per student : 38 hours	ECTS Number: 3
Reference Teacher: Eric RAGNEAU	

Generalities

Objectives

- Give to the students the pedagogical support necessary to understand the method, and the algorithms involved in a finite element calculation code.
- Assimilate the basic concepts of the M.E.F. to acquire mastery of calculation software.
- Use the method for the resolution of different field problems, in Deformable Solids Mechanics and in Thermal Transfer.
- Apply the different formulations to concrete problems, using the Abaqus software.

Description

I. Introduction

- Weak formulation and strong formulation of a problem at the limits
- Example of solving a 2nd order differential equation by the finite element method from the weak formulation of the problem
- Special case of Mechanics: weak formulation and energetic approach

II. Matrix formulation of the method in Mechanics of Deformable Solids

- Discretized equilibrium equation of a finite element
- Techniques for assembling elements
- Interpolation function of planar elements - Generalization in space
- Curved isoparametric elements
- Numerical integration – Gaussian points

III. Specific Finite Elements for Strength Materials Science

- Bernoulli beam elements
- Thin plate elements (Kirchhoff) and thick plates (Mindlin)
- Digital Lock Phenomena – Reduced Integration

IV Application of the Finite Element Method on concrete examples using the Abaqus software

Requirements

GMA05-MMC

GMA06-RdM1

GMA07-RdM2

Course requirements and assessments

Teaching Language

French

Teaching methods

The course is taught from a "fill-in-the-blank" document that students complete with the help of the teacher during the Course-Tutorial sessions.

The Tutorial and Practical Work sessions then allow students to implement the concepts and theories seen in the Course-Tutorial.

Number of hours per course type:

Course-Tutorial : 16 hours

Tutorial : 12 hours

Practical Work with Abaqus Software : 10 hours

Evaluation

A supervised assignment grade (coefficient 3) + a practical work grade (coefficient 1)

Bibliography

Bibliography

Zienkiewicz : La méthode des Eléments finis. Edisciences

Gallagher : Introduction au calcul par Eléments Finis. Editions Pluralis

Batoz, Dhatt : Modélisation des structures par éléments finis. Editions Hermès

K. J. Bathe : Finite Element Procedures in Engineering Analysis. Prentice et Hall

Contacts

Contacts

Dominique GUINES, Lionel LEOTOING, Eric RAGNEAU

Subject name: Project: Industrialisation	Code EC: GMA07-PRIND
Number of hours per student: 42 h	ECTS Number: 4
Reference Teacher: Jean Guillaume GOURDON	

Generalities

Objectives (2000 characters)

The objectives of this project-based teaching are to:

- Define an industrialisation process;
- Implement production;
- Monitor production.

The macro-skills targeted by the project are:

- Choosing a means of production based on specifications;
- Designing the production stages;
- Implementing CAM software;
- Implementing metrology software;
- Implement CNC machine tools;
- Implement machining tools;
- Implement workpiece holders;
- Inspect a workpiece;
- Adjust CNC machine tools;
- Implement an experimental approach;
- Manage a production unit;
- Communicate;
- Manage a project.

Description (2000 characters)

Industrialisation can be defined as the means and methods necessary to move from research or studies to a workshop or factory capable of delivering a product that meets defined specifications, within budget, on time and in accordance with company ethics.

This important process is entrusted to the methods departments in manufacturing industries.

Thus, based on a product's specifications, industrial context and technical environment, each project team must implement the various phases of industrialisation.

The project consists of three main stages:

- designing the industrialisation process;
- preparing and fine-tuning the industrialisation process;
- producing the product batch.

Breaking down the process into stages makes it possible to clearly identify the relationships and constraints between the different phases and resources involved in the industrialisation process for a product. Organisational, financial and environmental constraints are an integral part of the project approach.

Requirements (2000 characters)

The requirements are related to the 3GMA courses on processes: GMA05-PMI, GMA06-MOPI, HUM06-IMO.

Course requirements and assessments

Teaching Language (2000 characters)

French

Teaching methods (500 characters)

The project-based approach has been chosen for this course because it favours an active and practical situation that allows students to complete their training, develop approaches, use the knowledge they have acquired and acquire new knowledge in areas related to technical and organisational skills.

The project teams are made up of 6 or 7 students

Number of hours per course type: (2000 characters)

CM: 2 h

TD: 20 h

TP: 20 h

PR: 0 h

CONF: 0 h

Autres: 0 h

Evaluation (200 characters)

Continuous assessment, defence and reports

Bibliography

Bibliography (2000 characters)

The bibliography is that of the 3GMA courses on processes: GMA05-PMI, GMA06-MOPI, HUM06-IMO.

Contacts
Contacts (2000 characters)
Jean-Guillaume GOURDON

Other information
Other information
-

Subject name: Power transmission	Code EC: GMA07-PUI
Number of hours per student : 48 h	ECTS Number: 4
Reference Teacher: Olivier ROBILLARD	

Generalities

Objectives (2000 characters)

Factors influencing the choice of power transmission technology. Sizing of power transmission line components. Energy considerations. Efficiency.

Description (2000 characters)

1. Mechanical power transmission

a Dynamic study of gears and gear trains

- Forces on teeth, shafts and bearings,
- Resistance to surface pressure,
- Resistance to breakage,
- Simplified ISO dimensioning method
- Efficiency in gears and gear trains,

b Rigid and flexible couplings

- Dynamic study,
- Transmissible torque,
- Classification,

c Constant velocity joints

- Kinematic and dynamic analysis,
- Design features,

d Clutches, couplers, converters, freewheels, brakes

- Design features,
- Dimensioning of friction clutches,
- Analysis of a braking phase: energy aspects,

2. Hydraulic power transmission

a Hydraulic circuits and their components

- Motors, turbines, compressors and pumps,
- Distributors,
- Cylinders,
- Pressure limiters,
- Flow limiters,
- Accumulators,

b Common problems: dimensioning and component selection

3. Case studies

Requirements (2000 characters)

GMA05-ARSM, GMA06-DICM, GMA06-PCO

Course requirements and assessments

Teaching Language (2000 characters)

French

Teaching methods (500 characters)

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Number of hours per course type: (2000 characters)

CM:

TD : 32 h

TP : 12 h

PR:

CONF:

Others:

Evaluation (200 characters)

1 three-hour supervised assignment – 1 practical work mark.

EC mark = [TP mark + 3* DS mark (3h)]/4

Bibliography

Bibliography (2000 characters)

Conception des circuits hydrauliques, Labonville
Technologie d'hydraulique industrielle, Portelli
Mécanismes hydrauliques et pneumatiques, Faisandier

Contacts

Contacts (2000 characters)

Olivier.robillard@insa-rennes.fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Nom de la matière : Allemand	Code EC: EC-HUMF07-ALL
Volume horaire total par étudiant: 21heures	Nombre crédits ECTS :
	1,5 ECTS
Responsable(s) : Cecile Hölzner-Jacques	

Généralités

Objectives, aims (2000 characters)

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 characters)

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)

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Modalités d'enseignement (500 caractères)

1.5–2 hours of classes per week.

Autonomous 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.

ENGLISH	Code EC: EC-HUM07-ANGL
Total number of hours per student : 28h	ECTS : 2
Supervisor : Philippe LE VOT	

General information

Objectives and Purposes

General Objectives:

Acquisition of the linguistic tools necessary for work in a company. Achieving the required level (B2) for the awarding of the diploma.

Linguistic Objectives:

Achieve or strengthen the B2 level (required for the validation of the engineering degree and defined by the CEFR).

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Description

- **Action-oriented approach to language learning:** Learn by doing: speaking and listening, writing a document while leveraging problem-solving, construction, demonstration, and persuasion skills.
- **Expressing oneself with precision** through rigorous use of syntax and phonology. Activities that call on the creativity and responsiveness of students, such as debates, role-playing, individual oral presentations using PowerPoint or Canva, and projects, will focus on current, scientific, and societal topics.
- Writing letters and CVs.
- Syntax structures specific to scientific English.
- Exploring the professional world in an international context.
- Preparation for the TOEIC (2nd semester: specific course "TOEIC Booster").

Prerequisites:

English courses from the 1st, 2nd, and 3rd years or equivalent.

Course and Evaluation Modalities

Language of Instruction

English

Teaching Methods

The classes are two hours long and are held in rooms that are mostly equipped with projectors and sound systems. We have a multimedia language lab as well as computer rooms to provide students with a setting conducive to stimulating learning.

The educational resources used include press articles, audio and video materials (TV reports, excerpts from films or series), and the Internet is used as a documentary source.

Regular personal work is required. Students are expected to be curious and to continue practicing beyond the classroom

Hours by Course Type

- **Lectures (CM):**
- **Tutorials (TD):** 28 hours (14 sessions of 2 hours each)
- **Practical Work (TP):**
- **Research Projects (PR):**
- **Conferences (CONF):**
- **Others:**

Evaluation Methods / Coefficient

1 in-class presentation (see departments) + 1 continuous assessment grade (average of different graded assignments)

Bibliography

Bibliography

Any English-language materials, whether technical or otherwise.

Contacts

Contacts

plevot@insa-rennes.fr

Subject name: CHINESE LV2-LV3	Code EC: EC-HUMF07-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: Entrepreneurship and innovation	Code EC: EC-HUM07-EI
Number of hours per student: 48h	ECTS Number: 3
Reference Teacher: Fanny GOURRET (STIC), Philippe MENKE (MSN)	

Generalities

Objectives (2000 characters) Cliquez ou appuyez ici pour entrer du texte.

The module aims to stimulate the creativity, initiative, and open-mindedness of future engineers through the development of an innovative entrepreneurial project.

This cross-disciplinary module brings together students from various specialties.

Main learning outcomes:

- Demonstrate creativity and initiative,
- Learn to persuade by mastering analytical techniques, logic, and the specific vocabulary of the business world,
- Show critical thinking skills to identify both the key success factors and the potential risks of an innovative project,
- Understand the key players in networks that support business creation and promote technological, economic, or social innovation.

Description (2000 characters)

The main topics covered are:

- Creativity techniques;
- The process of an innovative project: defining the need and the innovative offer (state of the art and product positioning), market study and business plan, strategy and operational plan, business model, and economic valuation of projects;
- Legal aspects: issues related to intellectual property (patents, trademarks, designs), company law, and contract law;
- Tax aspects: taxation of innovative companies;
- Financial forecasting: projected income statement and financing plan.

Requirements (2000 characters)

CREATIV (S6)

Course requirements and assessments

Teaching Language (2000 characters)

french

Teaching methods (500 characters)

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A large part of the module is based on the learning-by-doing approach: students gradually develop a product and/or service development plan (intrapreneurship) or a business creation project (entrepreneurship). Prior to this, they take part in creativity sessions focused on trends or societal challenges previously identified by the teaching team.

Throughout the course, students gather the information and guidance needed to build a business plan through lectures and practical sessions. They are also supported by tutors who encourage them to question the relevance and validity of their work. Student teams are encouraged to take part in innovation and entrepreneurship competitions or challenges.

Groups also benefit from tutorial sessions.

Number of hours per course type: (2000 characters)

CM: 10

TD: 26

TP:

PR:

CONF:

Autres 12:

Evaluation (200 characters)

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Continuous assessment (collective work)

Progress is evaluated through progress reports in the form of oral presentations.

Bibliography

Bibliography (2000 characters)

Provided during the course

Contacts

Contacts (2000 characters)

Fanny GOURRET, Philippe MENKE

Other information

Other information

Subject name: PHYSICAL EDUCATION (EPS) SEMESTER 7	Code EC: EC-HUM07-EPS
Number of hours per student: 24H	ECTS Number: 1
Reference Teacher: Gérard VAILLANT Yvan HINAULT Maïté LOSCHETTER	

Generalities

Objectives (2000 characters)

Aims

The program aims to contribute, through the practice of Physical, Sports, and Artistic Activities, to the education and development of future citizens. It seeks to foster individuals who are capable of managing their present and future health, communicating effectively, participating actively in group dynamics, demonstrating innovation, and showing adaptability in various contexts.

Learning Objectives

Upon completion, learners should be able to:

1. Manage their own learning and training processes in a structured and reflective manner.
2. Engage in and take responsibility for the organization and management of a group, a structure, or a collective project.
3. Take charge of their physical, mental, and social health as an ongoing process of well-being and self-regulation.

Description (2000 characters)

This course aims to develop students' motor, personal, social, and methodological competencies through the practice of physical, sports, and artistic activities. It fosters autonomy, adaptability, creativity, and responsibility in both individual and collective contexts.

Motor and Cultural Competencies: Master the technical and tactical fundamentals of the chosen activity. Adapt to varying play conditions, environments, and performance spaces. Develop specific physical qualities (endurance, flexibility, strength, speed) and psychological resources (focus, perseverance, stress management, confidence).

Personal Competencies: Take responsibility for one's long-term health and safety. Manage emotions and stress with self-control. Demonstrate innovation and creativity in practice. *Semester 7 focus : Understand one's motor preferences and identify the motivations driving one's practice to ensure long-term engagement throughout life;* Recognize one's strengths and weaknesses in order to use them most effectively.

Interpersonal and Social Competencies: Work effectively in teams—listen, communicate, motivate, and lead. Adopt an eco-citizen approach by respecting others, oneself, the environment, and equipment. *Semester 7 focus:* Adjust verbal and non-verbal communication to suit the group context. Handle conflicts in a way that leads to constructive and mutually beneficial outcomes.

Methodological Competencies: Manage complex projects by setting objectives, planning, and evaluating outcomes. Make informed decisions through observation, reflection, and feedback. *Semester 7 focus:* Commit to a learning project (evaluate one's initial level, identify areas for progression, gather information, and self-assess). Plan practice to achieve realistic goals

Requirements (2000 characters)

Cliquez ou appuyez ici pour entrer du texte.

Course requirements and assessments**Teaching Language (2000 characters)**

French

Teaching methods (500 characters)

Through original and varied situations, this course engages all of the student's resources — motor, cognitive, relational, emotional, and informational.

Through action and experience, students are confronted with complex problem-solving and decision-making processes.

This practice encourages students to take autonomous responsibility for their own health, understood as a state of well-being requiring continuous regulation. It also contributes to preventing risky behaviors, reducing sedentary lifestyles, and promoting social integration.

Enjoyment serves as a key source of motivation, ensuring sustained engagement in both practice and learning

Number of hours per course type: (2000 characters)

CM:

TD: 20

TP:

PR:

CONF:

Autres:

Evaluation (200 characters)**Assessment**

Students are evaluated on their participation, progress, and mastery of the competencies developed throughout the cycle.

Grading:

- 10 points for motor and cultural competencies.
- 5 + 5 points for two additional competencies selected by the instructor from personal, interpersonal and social, or methodological competencies.

Bibliography

Bibliography (2000 characters)

Cliquez ou appuyez ici pour entrer du texte.

Contacts

Contacts (2000 characters)

Cliquez ou appuyez ici pour entrer du texte.

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Nom de la matière : Spanish	Code EC: EC-HUMF07-ESP
Volume horaire total par étudiant: 21h	Nombre crédits ECTS : 1,5 ECTS
Responsable(s) : Marine Amargos Guilleray	

Généralités

Objectifs, finalités (2000 caractères)

1 – Beginner Level:

Establish the grammatical and linguistic foundations of the Spanish language. Introduce students to Spanish and Latin American cultures. Be able to produce simple sentences related to everyday topics.

2 – Intermediate Level:

Maintain and strengthen linguistic skills, and deepen cultural knowledge (Hispanic culture, Spanish and Latin American civilization, social issues).

- Know how to manage a team around a project.
- Be able to integrate into a multicultural environment.

Be capable of taking into account the social, environmental, technological, and economic

3 – Advanced Level:

Consolidation of linguistic skills and deepening of cultural knowledge (Hispanic culture, Spanish and Latin American civilization, social issues).

- Know how to manage a team around a project.
- Be able to integrate into a multicultural environment.
- Be capable of taking into account the social, environmental, technological, and economic challenges of Spanish-speaking countries.
- challenges of Spanish-speaking countries.

Description

Speaking and writing skills, listening and reading comprehension.

Pré-requis (2000 caractères)

Spanish A1: None

Spanish A2: Must have A1 level

Intermediate Spanish: Must have B1 level

Advanced Spanish: Must have B2 level

Modalités du cours et des évaluations

Langue d'enseignement (2000 caractères)

Spanish

Modalités d'enseignement (500 caractères)

Face-to-face tutorials

Volume horaire par type de cours : (2000 caractères)

CM :

TD : 21 hours /semester

TP :

PR :

CONF :

Autres :

Modalités d'évaluation / coefficient (200 caractères)

Continuous assessment- Coefficient 1,5

Bibliographie

Bibliographie (2000 caractères)

"La grammaire active de l'espagnol", le livre de poche. Collection Les langues modernes + "El arte de conjugar en español" -Hatier+ "Passez-moi l'expression en espagnol", Belin + "El español en la prensa", Belin

Contacts

Contacts (2000 caractères)

Marine Amargos Guilleray : marine.amargos@insa-rennes.fr

Autres

Autres informations

Cliquez ou appuyez ici pour entrer du texte.

Subject name: French foreign language	Code EC: EC-HUMF07-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-HUMF07-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-HUMF07-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

Nom de la matière : Language Project	Code EC: EC-HUMF07-LV2P
Volume horaire total par étudiant: 7 hours /semestre	Tous semestres
	Nombre crédits ECTS : 0,5
Responsable(s) : C.Hölnzer, M.Amargos, D.Fouré	

Généralités

Objectifs, finalités (2000 caractères)

German Project: 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 Using and improving German language skills within the framework of a project.

Spanish Project: 1- Prepare for the Spanish language certification: the DELE Spanish Project

2- Facilitate oral expression and build students' confidence before studying abroad in a Spanish-speaking country - Acquire fluency and enjoy expressing oneself in Spanish without being constrained by grammar rules.

French as a Foreign Language (FLE) Project: 'International Student Short Film Festival' in conjunction with the Interculturality course. An educational outing (or field study) is proposed to study an issue in social sciences and/or TSE that interests them. The aim is to produce an audiovisual report that may consist of interviews, particularly with experts and professionals, to address the issue on the programme. These meetings will enable them to exchange views and refine their analysis. Finally, students will be asked to present their findings to the public. The reports will be screened at an International Festival on an intercultural theme studied in class.

Description (2000 caractères)

German Project:

- Preparation for the Goethe Institute's 'Zertifikat' exam, level B2 or C1 (external certification)
- Thematic courses: cultural awareness
- Project related to the industrial world: international economics: Germany
- Preparation for mobility
- Preparation: study trip

Spanish Project:

Spanish Project 1

- Written and oral tests
- Written and oral work in preparation for the exam

Spanish Project 2

- Oral expression: debates on current affairs and discussions on the main concerns of students

FLE Project:

- Oral expression, confidence in front of an audience
- Creation of an audiovisual report
- Preparation for oral expression to obtain the DELFB2/DALFC1

Pré-requis (2000 caractères)

German Project: German Level B2

Spanish Project: Baccalaureate Level

FLE Project: Levels B1 to C1

Modalités du cours et des évaluations

Langue d'enseignement (2000 caractères)

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Modalités d'enseignement (500 caractères)

German Project: 7 hours/semester in class 10 hours of independent and group work Class hours are intended to review students' independent work and project progress. Most of the work is done outside of class, preferably in groups of 2 or 3 students (exception: 'Zertifikat' project with methodological assistance during class).

Spanish Project: Regular training with DELE workbook

Volume horaire par type de cours : (2000 caractères)

German Project: 7 hours of tutorials per semester

Spanish Project: 7 hours of tutorials per semester

FLE Project: 7 hours of tutorials per semester

Modalités d'évaluation :

German Project: Semester 1: Final Mark - Semester 2: Final Mark

Spanish Project: Written

FLE Project: Oral/Public presentation as part of an international short film festival

Coefficient: 0.5 (1 for Erasmus exchange students)

Bibliographie**Bibliographie (2000 caractères)**

German Project: Zertifikat Project: Goethe-Institut exam papers (B2 and C1) in the INSA library

Spanish Project: Books related to the DELE

Contacts

Contacts (2000 caractères)

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Autres

Autres informations

Cliquez ou appuyez ici pour entrer du texte.

Subject name: Intercultural Modul	Code EC: EC-HUMF07-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

Subject name: Russian	Code EC: EC-HUMF07-RUS
Number of hours per student: 21h	ECTS Number: 1,5
Reference Teacher: Cécile HÖLZNER-JACQUES	

Generalities

Objectives (2000 characters)

Russian beginner : acquire A1 level
 Russian intermediary : acquire A2/B1 level

Description (2000 characters)

Acquisition of grammatical basis and commonplace vocabulary.
 Training of the 5 skills, oral and written comprehension, oral and written expression, interaction.
 The stress is put on written and oral communication, firstly in the frame of daily situations, then with a progressive introduction of other themes and opening on the professional communication.
 Training with varied media (written, audio, video)
 Individual exercises and works in groups, talks from the intermediate level on.
 Grammar program depending on the level.
 (Inter) cultural opening

Requirements (2000 characters)

Course requirements and assessments

Teaching Language (2000 characters)

Teaching methods (500 characters)

Number of hours per course type: (2000 characters)

CM:

TD: one hour -and-a-half courses per week in SUPELEc

TP:

PR:

CONF:

Autres:

Evaluation (200 characters)

Final grade (overseen by SUPELEC).

Bibliography

Bibliography (2000 characters)

To be seen with the teacher

Contacts

Contacts (2000 characters)

Other information

Other information