Subject name: Big Data Algorithms	Code EC: INF09-ALGODATA
Number of hours per student: 26.00 h	ECTS Number: 2.00
Reference Teacher: PARLAVANTZAS Nikolaos	

Generalities

Objectives *(2000 characters)*

This course introduces the key algorithmic challenges in Big Data processing, including reducing data complexity, efficiently managing large-scale datasets, and developing methods for extracting meaningful insights. Students will study algorithms applied to graph analytics, social network analysis, recommendation systems, and sponsored search, combining theoretical foundations with hands-on practice.

Description *(2000 characters)*

The course addresses the following topics:
- Graph analytics and graph databases
- Algorithms for social networks
- Recommendation algorithms
- Algorithms for sponsored search
- Big data processing frameworks, such as Apache Spark

Requirements *(2000 characters)*

Basic knowledge of databases, systems (cloud and parallelism), and Java programming.

Course requirements and assessments

Teaching Language *(2000 characters)*

English

Teaching methods *(500 characters)*

The course combines lectures with practical exercises based on big data processing frameworks.

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

CM: 7 x 2h
TP: 6 x 2h

Evaluation *(200 characters)*

The grade of the course will be the grade of the practical sessions.

Bibliography

Bibliography *(2000 characters)*

- Mining Massive Datasets, J. Leskovec, A. Rajaraman and J. Ullman, Cambridge University Press, 2020
- Networks, Crowds and Markets, D. Easley & J. Kleinberg, Cambridge University Press, 2010
- Graph Algorithms: Practical Examples in Apache Spark and Neo4j, M. Needham & A.E. Hodle, O'Reilly Media, 2019

Contacts

Contacts *(2000 characters)*

Nikolaos Parlavantzas

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Motion analysis and 2D/3D gesture recognition.	Code EC: INF09-AMRG
Number of hours per student: 26h	ECTS Number: 2
Reference Teacher: Eric Anquetil	

Generalities

Objectives *(2000 characters)*

In recent years, new human-machine interactions have emerged with the development of touch screens and motion capture technologies (e.g. Kinect and Leap Motion). These approaches leverage the potential for interaction offered by analysing and recognising 2D and 3D movements and gestures. Gesture-based commands enable users to perform a variety of actions simply by making gestures. The recognition of 2D and 3D gesture commands is currently a very active research topic in the following scientific fields: Computer Vision, Pattern Recognition and Human-Machine Interaction.

In this course, we will address this emerging theme of motion analysis and 2D/3D gesture recognition for new human–machine interactions. We will cover the principles of analysing and recognising time series. In our application context, time series correspond to the trajectories of moving joints. Technically, an action is defined as a sequence of gestures performed by a human subject while carrying out a task. Action recognition involves automatically identifying this sequence of movements against a set of possible commands.

The interpretation of these movements and gestures will be applied in the context of animation. This course will present the specifics of the recognition processes for these two types of actions (2D and 3D gestures), as well as possible convergences in the scientific approaches used. We will also cover animation concepts, an application domain in which gesture commands can be fully exploited.

Description *(2000 characters)*

Part 1: Signal Acquisition, Preprocessing, and Normalization (Richar Kulpa)

- Signal acquisition, preprocessing, and normalization
  - Signal acquisition on touch screens, stylus-oriented and tangible surfaces allowing simultaneous participation of multiple users.
  - Motion capture systems (MoCap) to extract body postures based on 3D joint positions and orientations using markers and a set of high-precision cameras.
  - Microsoft Kinect or Leap Motion sensor.
  - Morphological preprocessing and normalization.
  - Human skeleton modeling.

Part 2: 2D/3D Gesture Recognition (Eric Anquetil)

- Feature extraction and representation space
  - Extraction of 2D and 3D features;
  - Modeling temporal, spatial, and motion relationships.
- Artificial intelligence for 2D and 3D action recognition
  - Real-time and offline recognition
  - Skeleton-based gesture recognition
  - Recognition engines and machine learning algorithms:
    1. Graph modeling, matching, and embedding algorithm
    2. Dynamic Time Warping (DTW)
    3. Hidden Markov Model (HMM)
    4. Support Vector Machine (SVM)
    5. Neural Network (NN)
    6. Reject Option…
- Segmentation and detection of 2D and 3D actions
  - Direct and indirect commands
  - Early detection of an action in an unsegmented motion stream
  - Temporal segmentation methods, sliding windows…

Part 3: Animation (Ludovic Hoyet)

- Forward and inverse kinematics (analytical and numerical methods)
- Interpolations (linear, splines, etc.)
- Motion editing (deformations, blending, transplantation, corrections, etc.)

- Motion control
    - Finite state machines
    - Motion graphs

Requirements *(2000 characters)*

none

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

The module consists of lectures combined with a project that is carried out in pairs.

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

Lectures & Project: 26h
Homework: independent student work (about 1h/week).

Evaluation *(200 characters)*

Exam (2 hours): one theoretical part and one practical computer-based part.

Bibliography

Bibliography *(2000 characters)*

- Z. Chen, E. Anquetil, H. Mouchère, and C. Viard-Gaudin, “Recognize multi-touch gestures by graph modeling and matching,” in 17th Biennial Conference of the International Graphonomics Society, Pointe-a`-Pitre, France, Jun. 2015.
- Said Yacine Boulahia, Eric Anquetil, Richard Kulpa, Franck Multon, HIF3D: Handwriting-Inspired Features for 3D Skeleton-Based Action Recognition, IEEE. 23rd International Conference on Pattern Recognition (ICPR 2016), Dec 2016, Cancun, Mexico.
- Zhaoxin Chen, Eric Anquetil, Harold Mouchère, Christian Viard-Gaudin, The MUMTDB dataset for evaluating simultaneous composition of structured documents in a multi-user and multi-touch environment, 15th International Conference on Frontiers in Handwriting Recognition, Oct 2016, Shenzhen, China
- Acquisition de signaux, prétraitement et normalisation : SkeleMotion: A New Representation of Skeleton Joint Sequences based on Motion Information for 3D Action Recognition, C. Caetano, J. Sena, F. Brémond, J. A. Dos Santos and W. R. Schwartz; 2019 16th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS), 2019, pp. 1-8, doi: 10.1109/AVSS.2019.8909840.
- Segmentation et détection d’actions 2D et 3D :Skeleton-Contrastive 3D Action Representation Learning. THOKER, Fida Mohammad, DOUGHTY, Hazel, et SNOEK, Cees GM; MM ’21: Proceedings of the 29th ACM International Conference on Multimedia, October 2021, Pages 1655–1663; OadTR: Online Action Detection with Transformers. Wang, X., Zhang, S., Qing, Z., Shao, Y., Zuo, Z., Gao, C., & Sang, N. ; ICCV 2021, Pages: 7565-7575

Contacts

Contacts *(2000 characters)*

eric.anquetil@insa-rennes.fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: Advanced Database and semantic web	Code EC: INF09-BDASW
Number of hours per student: 28h	ECTS Number: 3
Reference Teacher: Peggy Cellier	

Generalities

Objectives *(2000 characters)*

First, it presents in-depth and fundamental technical aspects of traditional database management systems (DBMS). Second, it covers key aspects of database security. Finally, it introduces the core concepts of the Semantic Web, in particular how linked data on the web are represented (RDF) and queried (SPARQL).

Description *(2000 characters)*

The course covers the following topics:

- Database indexing
- Concurrent access
- Triggers
- Database query optimization
- Security (including *differential privacy*)
- Semantic Web (RDF, SPARQL, RDFS, and OWL)

Requirements *(2000 characters)*

The second-year and third-year database courses.

Course requirements and assessments

Teaching Language *(2000 characters)*

The course is taught in French, but the materials are in English. It can thus be delivered in English if needed.

Teaching methods *(500 characters)*

Need for in-depth study of the course material and preparation for practical sessions.

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

CM: 14
TD: 2
TP: 12
PR:
CONF:
Autres:

Evaluation *(200 characters)*

A two-hour written exam at the end of the semester.

Bibliography

Bibliography *(2000 characters)*

- Database Management Systems, R. Ramakrishnan et J. Gehrke, McGraw-Hill Higher Education, 2003
- XML, langage et applications, A. Michard, Eyrolles, 2000
- XML, des bases de données aux services Web, G. Gardarin, Dunod, 2002
- Le web sémantique, F. Gandon, C. Faron-Zucker, O. Corby, Dunod, 2012

Contacts

Contacts *(2000 characters)*

peggy.cellier@insa-rennes.fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: Communication, corporate soft skills, and	Code EC: INF09-COM
Number of hours per student: 20h	ECTS Number: 2
Reference Teacher: Peggy Cellier	

Generalities

Objectives *(2000 characters)*

The module is divided into two sections. The first aims to train students in communication and professional conduct within a corporate environment. The second focuses on the legal aspects of computer science.

Description *(2000 characters)*

Self-awareness and positioning for effective teamwork

• Identify one's behavioral style and that of others through multiple approaches: personality structures (derived from DSM frameworks), DISC method, transactional analysis.
• Identify personal values and assess their impact on professional interactions.
• Use transactional analysis concepts to enhance interpersonal communication.
• Apply these tools to strengthen self-knowledge and define one's role within a team.

Management evolution and self-diagnosis with Spiral Dynamics

• Analyze the evolution of management practices in connection with societal transformations using Spiral Dynamics.
• Understand and apply Spiral Dynamics to conduct personal and organizational diagnostics.
• Explore and experiment with collective intelligence and facilitation tools to reinforce collaboration.
• Develop a learner's mindset to adapt to ongoing professional changes.

Relationships and interpersonal interactions

• Identify and understand stakeholders' needs in professional exchanges.
• Master questioning techniques and active listening.
• Practice constructive feedback to improve communication.
• Manage relational difficulties and conflicts within a team effectively.
• Implement practical strategies to strengthen interpersonal interactions.

C**hange management: from strategy to operational execution**

• Understand the key stages of change management and steer the transformation process.
• Map the stakeholders involved in a change initiative.
• Apply the change-curve model to support resistance management.
• Build a timeline mapping the phases of change.
• Connect strategic change decisions with operational actions to ensure effective implementation.
• Practical tools to support operational stakeholders.

Legal training

Requirements *(2000 characters)*

None

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

The module is structured around an alternating format with theoretical input (2 hours) and practical application (2 hours). The theoretical sessions provide students with the core conceptual foundations, while the practical and guided sessions focus on operational application through exercises, case studies, simulations, and real-world professional scenarios.

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

CM: 20h
TD:
TP:
PR:
CONF:
Others: including 10h ST²

Evaluation *(200 characters)*

- Multiple-choice questionnaire (MCQ)
- Case study

Bibliography

Bibliography *(2000 characters)*

- *Méthode de conduite du changement – Diagnostic, Accompagnement, Performance* (5e édition) — David Autissier & Jean-Michel Moutot
- *Conduite du changement : concepts clés* (3e édition) — David Autissier, Isabelle Vandangeon, Alain Vas, Kevin J. Johnson
- *La boîte à outils de la Conduite du changement et de la transformation* — 65 outils clés en main, 3e édition
- *Spirale Dynamique – Comprendre comment les hommes s'organisent et pourquoi ils changent* — Fabien et Patricia Chabreuil
- *Manuel d'analyse transactionnelle — Ian Stewart & Vann Joines, traduit par Anne-Marie Scherrer. Éditeur : Dunod, 2005.*
- *Des jeux et des hommes – Eric Berne*

Contacts

Contacts *(2000 characters)*

Peggy.cellier@insa-rennes.fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: Competitive Programming	Code EC: INF09-CP
Number of hours per student: 20h	ECTS Number: 2.0
Reference Teacher: Pascal Garcia	

Generalities

Objectives *(2000 characters)*

Learn to solve algorithmic problems through algorithmic competition (https://github.com/lascar-pacagi/CompetitiveProgramming).

Description *(2000 characters)*

-General problem-solving methods.

-General methods for designing algorithms.

- Practical study of program complexity.

- Data structures (heap, union-find, binary search tree, segment tree, etc.).

- Specific methods for designing algorithms (brute force, greedy, divide and conquer, dynamic programming, etc.).

- Specific domains (graphs, string processing, etc.).

Requirements *(2000 characters)*

C++ or Python.

Course requirements and assessments

Teaching Language *(2000 characters)*

French.

Teaching methods *(500 characters)*

Course, practicals, and a small competition by groups of three.

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

CM:
TD:8h
TP:12h
PR:
CONF:
Autres:

Evaluation *(200 characters)*

Exam on machine.

Bibliography

Bibliography *(2000 characters)*

CSES: https://cses.fi/problemset/

https://usaco.guide/dashboard

Contacts

Contacts *(2000 characters)*

pgarcia@insa-rennes.fr

Other information

Other information

Subject name: DevOps	Code EC: INF09-DevOps
Number of hours per student: 38	ECTS Number: 4
Reference Teacher: Quentin Perez	

Generalities

Objectives *(2000 characters)*

Software quality is a major concern for today's and tomorrow's economy. The ability to improve software quality and user experience while maintaining the flexibility needed for evolution is key to the viability and sustainability of all industries. DevOps has emerged as a major cultural movement to address this need for increased agility. The movement essentially aims to bridge the gap between developers (Dev) and the teams that deliver and deploy software (Ops).
The objective of this course is to understand the basic concepts of DevOps and its current practice.

Description *(2000 characters)*

This course enables students to acquire the following knowledge and skills:

- Understanding what DevOps is and knowing its practice and integration with agility
- Knowing and implementing different types and levels of testing
- Understanding what a continuous integration system is and how to implement it
- Knowing the various aspects of software quality
- Integrating an existing codebase into a DevOps approach
- Knowing and implementing a build manager
- Knowing and implementing application monitoring

Requirements *(2000 characters)*

Very good knowledge of software testing, object-oriented programming, web development, scripting languages, and systems is required.

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

The course is delivered through lectures followed by practical sessions that cover the topics discussed in the lectures. Lectures include questionnaires and demonstrations to encourage interaction between the instructor and students.

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

CM: 8
TD:
TP: 30
PR:
CONF:
Autres:

Evaluation *(200 characters)*

1 graded group project (3 students per group) / weight: 2

Bibliography

Bibliography *(2000 characters)*

Contacts

Contacts *(2000 characters)*

quentin.perez@insa-rennes,fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: Domain-specific languages	Code EC: INF09-DSL
Number of hours per student: 38h	ECTS Number: 3.5
Reference Teacher: Mathieu ACHER	

Generalities

Objectives *(2000 characters)*

Understanding the principles, benefits, and limitations of DSLs (domain-specific languages).
Learn how to design a DSL “from scratch”: domain analysis, metamodeling, grammar, semantics, execution.
Implement Langium to specify concrete syntax, generate infrastructure (parser, validation, LSP services), and prototype tools (VS Code extension, compiler/interpreter).
Explore generative programming: code/variant generation from models & DSLs, use of LLMs to assist design, transformation, and testing.
Develop engineering skills: automated testing, tooling, CI, evaluation of a language and its tools.

Description *(2000 characters)*

The course is structured around a central project, broken down into practical assignments, in which each pair of students designs their own DSL from scratch—of their choice (e.g., board/video games, machine learning, data processing, etc.). The sessions cover: domain analysis, metamodel design, grammar definition, semantics implementation (compilation/interpretation), code generation, tooling with Langium (LSP, diagnostics, autocompletion), and industrialization in VS Code. LLMs are used critically to accelerate certain steps (compiler skeletons, test cases, evaluation), with a focus on quality, traceability, and limitations.

Requirements *(2000 characters)*

Proficiency in at least one language (TypeScript/Java/Python) and Git tools.

Desired knowledge: grammars/automata (basics), VS Code, Node.js/TypeScript.

Some experience with compilation/interpretation is a plus (but a quick refresher will be provided).

Course requirements and assessments

Teaching Language *(2000 characters)*

French (slides in English)

Teaching methods *(500 characters)*

Alternating between short lectures focused on concepts/demonstrations, guided practical work (in pairs), and project periods (PR) dedicated to the main project; continuous support, peer reviews, and mini technical reviews.
Tools: Langium + VS Code (LSP), Node.js/TypeScript, Git/GitHub

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

CM: 8
TD:
TP: 16
PR: 10
CONF:
Autres:

Evaluation *(200 characters)*

Main project (team, demos & technical report): 60% — DSL design, Langium tools, generation pipeline.
Graded assignments (interim deliverables/tests): 30% — grammar, semantics, tests, integration.
Quizzes/participation/peer review: 10% — understanding of concepts, cross-feedback. (Adaptable according to training constraints.)

Bibliography

Bibliography *(2000 characters)*

Langium – https://langium.org/
Langium – repo GitHub https://github.com/acherm/dsl-langium
VS Code – Language Server Extension Guide (LSP).
Martin Fowler – Domain-Specific Languages
Mernik, Heering, Sloane (ACM Computing Surveys, 2005) – When and How to Develop Domain-Specific Languages
Metamorphic Domain-Specific Languages: A Journey Into the Shapes of a Language Mathieu Acher, Benoit Combemale, Philippe Collet

Contacts

Contacts

Responsable : Mathieu Acher — mathieu.acher@irisa.fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: Ethics for engineers	Code EC: INF09-ETHIQUE
Number of hours per student: 16h	ECTS Number: 1
Reference Teacher: Peggy Cellier	

Generalities

Objectives *(2000 characters)*

This module aims to explore the ethical, societal, and environmental issues related to the design and use of computer systems. It seeks to develop a critical understanding among students of the impacts that computing systems have on individuals, society, and the environment.

Description *(2000 characters)*

In this module, students work in groups of 5 to 6 to create a bibliography on a specific ethical topic and present their findings through an unplugged game. Each group is assigned a different theme.
Examples of proposed topics include:

- Ethics and robotics
- Reproducibility as a challenge for computer science
- Artificial intelligence: environmental and economic impacts

Requirements *(2000 characters)*

None

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

Each group is expected to develop a relevant bibliography corresponding to their assigned topic.

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

CM:
TD: 16h
TP:
PR:
CONF:
Autres: dont 16h ST²

Evaluation *(200 characters)*

The final grade takes into account:

- The bibliography document
- The game (including the materials, the game rules, and the relevance of the game to the assigned theme)
- Self-assessment

Bibliography

Bibliography *(2000 characters)*

Depending on the topic, teachers are associated with each theme as resource persons, providing guidance to help groups build a relevant and well-founded bibliography.

Contacts

Contacts *(2000 characters)*

Peggy.cellier@insa-rennes.fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: IHM-UX	Code EC: INF05-IHM-UX
Number of hours per student: 24h	ECTS Number: 2
Reference Teacher: Arnaud Blouin	

Generalities

Objectives *(2000 characters)*

Acquire theoretical concepts and basic techniques in human-machine interaction to design and develop usable user interfaces and interactions.

Description *(2000 characters)*

The courses cover: designing user interaction with a computer tool; rapid prototyping; software development for a usable web-based human-computer interface (HCI); and HCI evaluation.
A project is associated with the courses and aims to design, develop, and evaluate a usable web-based HCI.

Requirements *(2000 characters)*

Web software development (TypeScript, Angular).

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

Classes, project

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

CM: 6h
TD:
TP: 18h
PR:
CONF:
Autres:

Evaluation *(200 characters)*

Project

Bibliography

Bibliography *(2000 characters)*

Cliquez ou appuyez ici pour entrer du texte.

Contacts

Contacts *(2000 characters)*

Arnaud.blouin@irisa.fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: Computer system vulnerabilities	Code EC: INF06-SECU
Number of hours per student: 26	ECTS Number: 2
Reference Teacher: FILA Barbara	

Generalities

Objectives *(2000 characters)*

Securing a system requires to first learn about its weak points (vulnerabilities) and understand how they can be exploited (attacks). This course deals with the security of systems, data and communication. An overview of main vulnerabilities and related attacks will be given. We will also talk about classical solutions to counter them.

Description *(2000 characters)*

- Fundamentals and historical facts
- Web and cloud security
- SQL injections
- XSS attacks
- Secure messaging with PGP
- Cryptographic protocols for confidentiality, authentication and privacy
- Man in the middle attack
- Privacy (dining cryptographers problem, three judges problem, oblivious transfer)
- Security of electronic passports
- Maths for security (prime numbers, factorisation problem, discrete logarithm problem, Euler's theorem)

Requirements *(2000 characters)*

Validation of the Computer Hygiene course during S5

Course requirements and assessments

Teaching Language *(2000 characters)*

French (English upon request)

Teaching methods *(500 characters)*

Revision of the lecture notes. Preparation for laboratory sessions.
This course is given by two teachers: a researcher from INSA and an industrial contributor.

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

CM: 20h
TD:
TP: 6h
PR:
CONF:
Autres:

Evaluation *(200 characters)*

A two-hour written examination at the end of the semester, based on the content of the lectures and laboratory sessions.

Bibliography

Bibliography *(2000 characters)*

Computer System Security, Gildas Avoine, Pascal Junod et Philippe Oechslin, 2009, 260 pages, CRC Press/EPFL Press.

Cryptography: Theory and Practice, Third Edition, D. Stinson, Chapman & Hall, 2005. Security engineering, Ross Anderson, 2008, 1080 pages, Wiley

Computer Security: Principles and Practice, Second Edition, W. Stallings, l. Brown, Pearson, 2012.

Introduction to Computer Security, M. Bishop, Addison-Wesley Professional, 2004.

Operational Semantics and Verification of Security Protocols, Cas Cremers and Sjouke Mauw, Springer 2012.

Contacts

Contacts *(2000 characters)*

FILA Barbara (barbara.fila@insa-rennes.fr)

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: Offensive Security	Code EC: INF09-SECU
Number of hours per student: 26	ECTS Number: 2
Reference Teacher: Gildas Avoine	

Generalities

Objectives *(2000 characters)*

Introduction to offensive security and pentesting, presentation of the security audit methodology and tools, and practices.

Description *(2000 characters)*

The course consists of the following sections:

- Module 1 – Recognition
- Module 2 – Web Applications
- Module 3 – System
- Module 4 – Post-Exploitation

Requirements *(2000 characters)*

Cyber-hygiene (3INFO), Computer Network Security (4INFO), and basic knowledge in Linux.

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

The lecturer is Rémi Matasse (Synacktiv). The teaching activities consists of ex-cathedra lectures and hands-on sessions.

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

CM: 8
TD:
TP: 18
PR:
CONF:
Autres:

Evaluation *(200 characters)*

The exam consists in compromising a system with a multi-level approach, using the concepts covered in the course. A report detailing the different steps must be written by the students. The lecturer's evaluation of the report will be the course grade. This exam may be completed by students at home. All resources available on the Internet may be used (apart from Human resources), however the exam must be completed **individually**.

Bibliography

Bibliography *(2000 characters)*

Contacts

Contacts *(2000 characters)*

Gildas Avoine

Other information

Other information

Subject name: From Know-How to let know	Code EC: INF09-SFFS
Number of hours per student: 28H	ECTS Number: 2
Reference Teacher: Christian RAYMOND	

Generalities

Objectives *(2000 characters)*

This module has two objectives:
- The study of a technology not integrated in the courses of the Computer Science department: Know-How;
- The presentation of the expertise acquired to the other students: Let Know

Description *(2000 characters)*

It comes in two ways depending on the choice of students:

1) Intervention in front of their colleagues, the students propose topics not covered in the curriculum they would like to know. In groups of 4 students, they study and prepare a 3 hours technology session organized as they wish (e.g. in the form of lectures and practical's) for their colleagues. Examples of topics: Ajax, Silverlight, Erlang, MDA, SAX, Ruby on Rails, Video Streaming, Cuda... The study of the subject is in autonomy but a teacher supervises the preparation of the course and attends the presentation during the session.
2) Collaboration with a company A subject of study may be proposed by a company. In this case a group of students work in cooperation with the company and prepare also a presentation of their work to their colleagues.

Requirements *(2000 characters)*

None

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

Cliquez ou appuyez ici pour entrer du texte.

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

CM: 2h
TD:
TP: 5h
PR:
CONF:
Autres: 1h

Evaluation *(200 characters)*

Mean between professor note and mean of student notes

Bibliography

Bibliography *(2000 characters)*

Cliquez ou appuyez ici pour entrer du texte.

Contacts

Contacts *(2000 characters)*

Christian.raymond@insa-rennes.fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: Conference – Internship Dating	Code EC: INF09-STGDATING
Number of hours per student: 24	ECTS Number:
Reference Teacher: Quentin Perez	

Generalities

Objectives *(2000 characters)*

This course aims to complement the curriculum by providing knowledge, practices, and industrial challenges not covered elsewhere in the program. It gives students a better understanding of companies, internal and external ecosystems, and professions. It also helps foster connections between students and businesses.

Description *(2000 characters)*

Conferences led by industry professionals cover various themes, including:

- Data management, data science, big data
- Introduction to the profession of IT systems architect
- Presentation of back-end developer roles in video games
- Introduction to the profession of project manager

These conferences can last 2 hours, span multiple 2-hour sessions, or be organized over a single day. One concrete example of a conference given concerns the optimization of industrial processes with the aim of reducing energy consumption by the company PureControl, located in Rennes.

Requirements *(2000 characters)*

None.

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

Cliquez ou appuyez ici pour entrer du texte.

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

CM: 24
TD:
TP:
PR:
CONF:
Others: dont 4h ST²

Evaluation *(200 characters)*

Validation based on student attendance

Bibliography

Bibliography *(2000 characters)*

Contacts

Contacts *(2000 characters)*

quentin.perez@insa-rennes.fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: Robotics	Code EC: INFT1-ROBO
Number of hours per student: 26.00h	ECTS Number: 2.00
Reference Teacher: PASTEAU François	

Generalities

Objectives *(2000 characters)*

The aim of this introductory module is to teach the basics of computer robotics through the use of a mobile platform. It covers the software design of such an application, while addressing the basic mathematical concepts required to control a robot. The chosen robotics platform will also introduce students to essential mechatronic components (odometry, electronic control boards, motors, etc.).
The module will also cover the design of a robot control system, including the use of a microcontroller and the development of a control algorithm.

Description *(2000 characters)*

-Introduction to robotics: sensors and actuators, control/command, servo control, robust algorithms
-Introduction to mobile robotics: development on the GOPIGO mobile platform
-Software design using the ROS (Robotic Operating System) software platform
-Sensor-based servo control: line follower, camera, tof sensor, odometry

Requirements *(2000 characters)*

Object-oriented programming
Architecture concepts
Linear algebra

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

This introductory module to robotics and control consists of 4 hours of lectures and 22 hours of project work, designed as a series of basic robotics building blocks to be completed. The first practical session will be devoted to assembling the robot in order to gain a thorough understanding of the various mechatronic components required to control the robot. The final practical session will take the form of a “challenge” in which all the robotic systems designed by the different groups of students will compete to complete an obstacle course using the mobile platform.

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

CM: 4h
TD:
TP: 22h
PR:
CONF:
Autres:

Evaluation *(200 characters)*

Graded project

Bibliography

Bibliography *(2000 characters)*

Gregory Dudek and Michael Jenkin. Computational Principles of Mobile Robotics. Cambridge University Press, New York, NY, USA. 2000.
Roland Siegwart and Illah R. Nourbakhsh. Introduction to Autonomous Mobile Robots. Bradford Co., Scituate, MA, USA. 2004.
Numerous courses and publications are available via the GDR Robotics at: http://www.gdr-robotique.org/cours_de_robotique/

Contacts

Contacts *(2000 characters)*

François Pasteau francois.pasteau@insa-rennes.fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: Computer Graphics	Code EC: INFT1-IG
Number of hours per student: 28	ECTS Number: 2
Reference Teacher: Maud MARCHAL	

Generalities

Objectives *(2000 characters)*

- Design of interactive graphics scenes in 2D and 3D
- Modeling, animation, rendering and interaction with 3D virtual worlds

Description *(2000 characters)*

- Modeling: data structures for 2D and 3D representations (meshes, curves and surfaces)
- Rendering: rendering of 2D images from 2D and 3D models, projective rendering methods, illumination and textures
- Animation: dynamics simulation of 3D objects, procedural animation and introduction to physics-based simulation

Requirements *(2000 characters)*

Knowledge on geometry, C++ programming

Course requirements and assessments

Teaching Language *(2000 characters)*

English (Supportive material are in English)

Teaching methods *(500 characters)*

Courses and practical hours

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

CM: 10
TD:
TP: 18
PR:
CONF:
Autres:

Evaluation *(200 characters)*

Practical courses and project

Bibliography

Bibliography *(2000 characters)*

* OpenGL Programming Guide. J. Kessenich, G. Sellers, D. Shreiner. Ed. Addison Wesley.
* Fundamentals of Computer Graphics. P. Shirley, M. Ashikhmin, S. Marschner. Ed. AK Peters/CRC Press.
* Computer Graphics: Principles and Practice. J. Hughes, A. van Dam, M. McGuire, D. Sklar, J. Foley, S. Feiner, K. Akeley. Ed. Addison Wesley.

Contacts

Contacts *(2000 characters)*

Maud.Marchal@insa-rennes.fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

Subject name: Reproducibility of experiments	Code EC: INFT1-REPRO
Number of hours per student: 26h	ECTS Number: 2
Reference Teacher: Mathieu ACHER	

Generalities

Objectives *(2000 characters)*

Understand key concepts and distinctions: reproducibility, repeatability, replicability.
Acquire a “repro” mindset: traceability, transparency, automation, control of environments.
Know how to reproduce and replicate results from scientific articles and industrial experiments (IT and non-IT).
Implement methods, tools, and best practices (containers, CI, dependency management, seeds, data/versioning).
Explore variability (sources of variation, variant space) and aim for consensus between implementations/results.
By the end of the course, be able to design a reproducible experimental protocol, execute it, and document deviations/limitations.

Description *(2000 characters)*

The course clearly introduces the concepts of reproducibility, repeatability, and replicability. We set up controlled environments (containers, locked dependencies, seeds) to eliminate ambiguities in execution.
Automation is systematic via scripts, Makefile, and continuous integration in order to replay experiments identically.
Students learn to trace data, configurations, and versions to ensure transparency and auditability.
We explore sources of variability (libraries, flags, randomness, platforms) and measure their impact on results.
The search for consensus between implementations and configurations serves as a guiding thread for interpreting the observed discrepancies.
Guided practicals serve as a “hello world” of reproducibility before moving on to more ambitious cases.
A mini-project leads each team to reproduce and then replicate a chosen article, with protocol, artifacts, and experiment log.
The tools used include Git/GitHub, Docker/Podman, notebooks or CLI, and a CI that orchestrates the whole process.
At the end of the module, each pair delivers an assessable and executable report documenting the results, variability, threats to validity, and limitations of a real scientific article.

Requirements *(2000 characters)*

Programming basics (Python/R/etc., as desired), Git, command line.
Desirable knowledge: containers (Docker/Podman), CI, basic statistics.
Scientific curiosity

Course requirements and assessments

Teaching Language *(2000 characters)*

French (resources are in English)

Teaching methods *(500 characters)*

Format: Short lectures (concepts + feedback), guided practical work (pairs/teams)

Tools: Docker/Podman, Make/CLI, Git/GitHub, GitHub Actions (CI), Python/R/Julia (your choice), Jupyter, seeds, requirements/lockfiles, simple data versioning, reproducible scripts.

Deliverables: reproducible protocol, scripts, environment(s), datasets (or references), experiment log, report (structure provided), executable artifacts, Quality/Repro checklist.

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

CM: 4
TD:
TP: 22
PR:
CONF:
Others: including 16h ST²

Evaluation *(200 characters)*

Reproduction/Replication Project (team) — 50%: reproducible pipeline, quality of scripts/artifacts, results, analysis of variability/threats to validity.
Graded assignments — 50% exercises, automation, reproducibility of “Hello World” cases and variants.

Bibliography

Bibliography *(2000 characters)*

Frictionless reproducibility and deep variability — HAL : https://hal.science/hal-04601752
Teaching Reproducibility and Embracing Variability — HAL : https://hal.science/hal-05190848v1
ACM Conference on Reproducibility and Replicability 2024 : https://acm-rep.github.io/2024/
Practical strategies for teaching reproducibility (Fund et al.)
Forum recherche reproductible : https://forum.recherche-reproductible.fr/
MOOC Reproducible Research II (Legrand, Hinsen, Pouzat, Simonin, …)
École JCJC en Programmation (EJCP) : https://gpl-ejcp.github.io/ejcp2023
Papers With Code, Software Heritage, Reproducible Builds (sites et docs officiels)

https://github.com/acherm/REP-INSA2526/

Contacts

Contacts

Responsable : Mathieu Acher — mathieu.acher@irisa.fr

Other information

Other information

Cliquez ou appuyez ici pour entrer du texte.

INSA RENNES : 2025/2026

Nom de la matière : Réalité Virtuelle	Code EC: INFT1-RV
Volume horaire total par étudiant: 26h	Nombre crédits ECTS : 2.00
Responsable(s) : Valérie Gouranton	

Généralités

Objectifs, finalités *(2000 caractères)*

This course aims to provide the fundamentals of virtual reality and, more broadly, extended reality (XR). We will mainly cover all the technologies used in the general context of interactive applications, with a particular focus on the following points: principles of real-time visualization; principles of interaction.

Description *(2000 caractères)*

History, definitions, and concepts
Real-time visualizationInteraction
Virtual reality devices, hardware configurations
Interaction paradigms and metaphors, application constraints
The project will be carried out in groups and will be defined with the course instructor.

Pré-requis *(2000 caractères)*

Aucun

Modalités du cours et des évaluations

Langue d'enseignement *(2000 caractères)*

French

Modalités d'enseignement *(500 caractères)*

In-depth study of the course, document research, and methods.

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

CM : 4
TD :
TP :
PR : 22
CONF :
Others: including 2h ST²

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

Assessment method: oral presentation of the project, one-page written report, access to Git

Bibliographie

Bibliographie *(2000 caractères)*

Le Traité de la Realité Virtuelle, 2ème édition, Edition des Presses de l'Ecole Nationale des Mines de Paris,Volume 1 et Volume 2, Gratuit en version électronique pour les étudiants http://www.caor.ensmp.fr/interlivre
Articles de recherches dédiés au sujet du projet

Contacts

Contacts *(2000 caractères)*

Valerie.Gouranton@insa-rennes.fr

Autres

Autres informations

Cliquez ou appuyez ici pour entrer du texte.

Subject name: Concepts from logic to programming	Code EC: INF05-CLP
Number of hours per student: 36h	Nombre crédits ECTS : 2
Reference Teacher:	

Generalities

Objectives *(2000 characters)*

This introductory module aims to raise students' awareness of the challenges of digital healthcare, through the design of an innovative application dedicated to the field of health and rehabilitation. The aim is to understand the scientific challenges as well as the development and testing methodologies related to this specific field.
The project aims to aid visually impaired individuals in navigating virtual environments with the assistance of a haptic device.

Description *(2000 characters)*

- Introduction to IT applications for healthcare
- Technical and digital aids for people with disabilities: understanding disability and the role of technical assistance
- Haptics: principles, uses, design
- Designing haptic signals
- Conception and design of virtual environments
- Defining an experimental protocol
- User studies

Requirements *(2000 characters)*

Object-Oriented Programming
Probability and Statistics

Course requirements and assessments

Teaching Language *(2000 characters)*

French

Teaching methods *(500 characters)*

This module comprises 4 hours of lectures and 18 hours of paired project work. The course is supplemented by practical work on specific topics required to make progress on the project (3D printing, ethical aspects and trials involving the human body, subjective data and questionnaires).

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

CM : 4h
TD :
TP :
PR : 22h
CONF :
Autres : including 22h ST²

Evaluation *(200 characters)*

Graded project, demos, oral presentation

Bibliography

Bibliography *(2000 characters)*

[1] https://societeinclusive.ca/
[2] M. Marchal. 3D Multimodal Interaction with Physically-based Virtual Environments. Habilitation à diriger des recherches de l'Université de Rennes 1, Novembre 2014.

Contacts

Contacts *(2000 characters)*

Marie Babel, marie.babel@insa-rennes.fr
Maud Marchal, maud.marchal@insa-rennes.fr
Louise Devigne, louise.devigne@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

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