



FACTSHEET 2023-2024

➤ General Information

Institut Polytechnique des Sciences avancées (IPSA) – Erasmus Code: F PARIS342
 63 bis boulevard de Brandebourg, 94200 Ivry-sur-Seine, FRANCE
 International office: international@ipsa.fr / +33 (0) 1 84 07 15 00
 Website: <https://www.ipsa.fr/en> / Summer School: <https://summer-schools.fr/school-ipsa/>

➤ Calendar

| | Summer School 2023 | Fall 2023 | Spring 2024 |
|-----------------------------|----------------------------------|---------------------|-------------------|
| Nomination Deadline | Direct application | April 15, 2023 | October 15, 2023 |
| Application Deadline | May 2023 | May 15, 2023 | November 15, 2023 |
| Semester Dates | 3 weeks in July | September – January | February - June |
| Orientation Days | A week before the program starts | | |

➤ Nomination and Application

University officers: To nominate your students, please complete the following nomination form: [HERE](#).

Once students have been nominated by their home university, IPSA will inform the applicants about the application details and lists of subjects available by email.

Application documents usually include:

- Application form + Learning agreement
- Copy of Passport
- Transcripts from previous years + Current year
- Proof of language efficiency (Letter from university or Certificate: equivalent CEFR B2)

Students receive an acceptance letter and further information after they have submitted a complete application and have been accepted by IPSA.

➤ Courses

In France, normal full-time degrees require 30 ECTS per semester. Exchange students may take less credits if their university allows it.

Exchange students can join one of the following programs:

- Aero 3 (undergraduate level courses) – English or French pathways
- Aero 4 (graduate level courses, spring semester) – English pathway
- Aero 5 (graduate level courses, fall semester) – English pathway except for Management option

The updated lists of courses are sent to the nominated students as soon as it is available.

➤ Language requirements

Aero 3: A B2 level in the selected language (French or English) is mandatory.

Aero 4 and Aero 5 (except Management): A B2 level in English is mandatory.

Aero 5 (Management option): A B2 level in English and French is mandatory.

➤ Health insurance and Civil liability

EU-students: A valid European Health insurance Card (EHIC) for the duration of our stay in France is mandatory. You must present it at your arrival. A complementary health insurance is recommended.

Non-EU-students: You must enroll in the French student social security scheme (free) once in France. A complementary health insurance is recommended.

A civil liability (third-party liability) is mandatory for all students.

➤ Other information

- Cultural activities with the international student association
- Free French lessons and cultural courses
- More than 70 clubs related to space, drones, robotics, sports...
- A buddy system to help international students throughout their academic mobility

➤ Cost of living

Incoming students can benefit from our partner's dedicated student housing platform. They will have access to hundreds of offers including student residencies... and benefit from personalized support throughout their rent!

| BUDGET | |
|--|--------------------|
| Tuition fee | Waived |
| Student health insurance (French social security) | Free |
| Accommodation | 500-800€ / month |
| Food | 200€ / month |
| Transportation | 30€ / month |
| Visa – VLS-TS (4 months to 1 year) | 50€ |
| ALLOWANCES AND SCHOLARSHIPS | |
| Personal housing allowance (APL): All students renting an accommodation in France can receive APL. | Up to 210€ / month |
| Scholarships: Please contact the Campus France office in your country | |

➤ **Visa**

<https://france-visas.gouv.fr/en/web/france-visas/>

This website provides information on how to navigate each step of visa application process.

➤ **SHORT PROGRAM: Summer School – Imagine, Develop, Fly**

- a 3-week program in July (3-21 July 2023)
- in Paris
- all-included program
- application period: February – May directly at international@ipsa.fr

Our 3-week program aims at providing key concepts about the flying equation system and about how to build and control drones with a robotic arm. First, students will learn how to design a robot using Robot Operating System. Second, they will build, stabilize, and make a real bicopter fly.

The cultural fun is guaranteed by the interactive visits and intercultural workshops in Paris all along the 3 weeks.

The program fee covers accommodation, material kit, cultural activities, lunch and coffee breaks on course days, public transport pass in Paris. There is no tuition fee or application fee for students coming from our partner universities.

Prerequisites:

- Basics of Python and C/C++
- Intermediate programming skills
- Understanding of Object-Oriented Programming
- Recommended to have 2 years of higher education in robotics
- B2 English level

Fees: 1.850 euros for students coming from our partner universities (instead of 2.650 euros)

Application before May 15 to international@ipsa.fr by sending the following documents:

- Application form
- Previous and current transcript of records
- Copy of valid passport
- Proof of English proficiency (B2 level)

AERO 3: Undergraduate courses

Incomings

AUTUMN SEMESTER = "S5" = 3rd year

| Modules | Scheduled hours | ECTS | In-class hours* | | | | Assessments | | | Out-of-class hours | Teaching Units | |
|--|---|------|-----------------|------------------|----------------|----------|-------------|-----------------|--------------|--------------------|----------------|----------|
| | | | Lectures | Tutorial classes | Practical work | Projects | Assignts | Mid-term exams* | Final exams* | | | |
| Basic Sciences 1 | | | | | | | | | | | | |
| AnMa312 | Elements of harmonic analysis for engineers | 45 | 3,5 | 14 | 20 | 6 | | PW | 2 | 3 | 40 | PSF 31 |
| AnMa313 | Numerical linear algebra 1 | 36 | 3 | 10 | 12 | 10 | 2 | PW | Project | 2 | 35 | |
| AnMa315 | Data and decision science 1 | 30 | 2,5 | | 24 | | 4 | Project | | 2 | 30 | |
| Engineering sciences - Core | | | | | | | | | | | | |
| AnEn311 | Heat transfers 1 | 40 | 3 | 18 | 8 | 10 | | | 2 | 2 | 30 | PSITC 31 |
| AnMé311 | General mechanics 1 | 45 | 3 | 12 | 12 | 16 | | PW | 2 | 3 | 30 | |
| AnIn311 | Introduction to databases | 17 | 1,5 | 4 | 4 | 4 | 4 | Project | | 1 | 20 | |
| AnAu311 | Automation of linear dynamical systems | 22 | 2 | 10 | 10 | | | | MCQ | 2 | 25 | |
| Aerospace | | | | | | | | | | | | |
| AnMf311 | Aerodynamics 1 | 22 | 2 | 10 | 10 | | | Contin. assess. | | 2 | 25 | PAS 31 |
| AnAé312 | Flight mechanics (performances, static equilibrius) | 22 | 2 | 10 | 10 | | | Homework | | 2 | 25 | |
| AnEl311 | Electrotechnics & embedded power generation | 21 | 1,5 | 10 | 8 | | | | 1 | 2 | 20 | |
| AnSp311 | Introduction to space systems | 11 | 1 | 10 | | | | | | 1 | 8 | |
| Business knowledge and occupational integration 1 | | | | | | | | | | | | |
| AnMi311 | Project management | 18 | 1,5 | 4 | | | 12 | Projects | | 2 | 20 | PCIP 31 |
| AnMi314 | Decarbonising aeronautics: technological leveragings | 11 | 1 | 8 | | 2 | | | | 1 | 5 | |
| Languages 1 | | | | | | | | | | | | |
| FLEa | French as a foreign language and intercultural seminars | 32 | 6 | 30 | | | | Contin. assess. | Project | 2 | 25 | |
| AnLa311 | English 1 | 19,5 | 1,5 | | 12 | | 6 | Contin. assess. | Present. | 1,5 | 15 | |
| AnLa312 | Preparation for English tests | 14 | 1 | | 12 | | | Contin. assess. | | 2 | 12 | |

* Hours

405,5

36

365

Subjects list and credits
(Academic year 2023-2024)
AERO 5 (Promo 2024)

| SYS | VEH | MLI | |
|-----|-----|-----|-----|
| ✓ | | | SAA |
| ✓ | | | TIE |
| ✓ | ✓ | | ELS |
| | ✓ | | CAE |
| | ✓ | | EMO |
| | | ✓ | MPI |
| | | ✓ | MPM |

| Fall semester = "S9" = 2nd year of Master | | | | | | | | | | | |
|--|---|------------------------|--------------|--|----------|----------------|---------------------|----------|--------------------|-------|---------------|
| Code | Subjects | Teaching hours & exams | ECTS credits | Teachers | Lectures | Tutorials (TD) | Practical work (TP) | Projects | Marked Assignments | Exams | Personal work |
| Pole "Human Sciences & Languages" COMMON CORE FOR ALL STUDENTS | | | | | | | | | | | |
| Sh 511 | Enjeux sociétaux | 13 | 1 | D. MARICOURT | 12 | | | | | 1 | 18 |
| Sh 512 | Facteurs humains et Interaction Homme-Machine (16h) Analyse Sécurité des Vols (4h) | 21 | 1,5 | F. REYNAUD B. DANIEL | 20 | | | | | 1 | 12 |
| FLa | French as a foreign language - 1st semester (26h) COMPULSORY Intercultural seminar (6h) COMPULSORY | 34 | 6 | T. MINOT S. DESCAVES | 32 | | | | | 2 | 30 |
| Pole "Corporate knowledge & Professional skills" COMMON CORE FOR ALL STUDENTS | | | | | | | | | | | |
| <i>Cours dispensés en langue française</i> | | | | | | | | | | | |
| Sh 515 | Droit des contrats et droit du travail | 17 | 1 | F. BONNARD | 10 | 6 | | | | 1 | 12 |
| Mi 519 | Cycle de vie et éco-conception | 11 | 0,5 | V. PERRARD - J. NAVARATNAM | 6 | 4 | | | | 1 | 10 |
| In 519 | Initiation à la Cybersécurité | 10 | 1 | A. MOITTEAUX - C. SAGAZ | 10 | | | | TD | | 12 |
| Mi 518 | Techniques de conduite de projet | 13 | 1 | O. TERRIEN | 4 | 8 | | | | 1 | 10 |
| Mi 511 | Stratégie d'entreprise - Etude de cas | 12 | 1 | J-F. DE JUNNEMANN | | 12 | | | TD | | 12 |
| Mi 517 | Outil de gestion-certification (Excel- TOSA et VBA) | 16 | 1 | S. BOUTELOUP | | 16 | | | TD | | 12 |
| <i>Project</i> | | | | | | | | | | | |
| Pm 511 | Master Project IPSA PMI (*) | 20 | 6 | W. ABASSI | | | | 20 | | | 100 |
| (*) only supervised hours are counted | | | | | | | | | | | |
| Pole "Engineering sciences" - Major Students must choose 1 major | | | | | | | | | | | |
| <i>Major SYSTEMS (only for students with ELS/S, SAA and TIE options)</i> | | | | | | | | | | | |
| Au 511 | Aircraft Modeling - Autopilot | 24 | 1,5 | J-P. NOUAILLE | 8 | | 16 | | TP | | 17 |
| Au 512 | Identification & observation of systems (deterministic & stochastic observers, Kalman filters) | 34 | 2 | S. DIOP - Y. SELLAMI | 16 | | 16 | | TP | 2 | 15 |
| Ma 512 | Deep Neural Network & Deep Learning | 18 | 1,5 | O. AL HAMMAL | 8 | 10 | | | TP - Project | | 20 |
| Au 513 | Systems design - Fast prototyping | 24 | 2 | A. DEBIANE - Y. SELLAMI | 6 | | 16 | | TP | 2 | 20 |
| <i>Major VEHICLES (only for students with CAE, ELS/V and EMO options)</i> | | | | | | | | | | | |
| Mf 511 | Introduction to Hypersonic Aerodynamics | 26 | 2 | P-E. WEISS | 12 | 12 | | | | 2 | 20 |
| Mé 511 | Vibration Dynamics of Plates and Shells | 22 | 1,5 | M. GALIMBERTI | 12 | 8 | | | | 2 | 20 |
| Mé 512 | Reliability & fatigue of structures | 13 | 1 | J-F. BEGUE | 8 | 4 | | | | 1 | 10 |
| Mé 513 | Calculation of ground and flight loads | 21 | 1 | J-F. BEGUE | 12 | 8 | | | | 1 | 10 |
| Mf 512 | Computational Fluid Dynamics (CFD) | 18 | 1,5 | W. ABASSI | | | 18 | | TP | | 25 |
| <i>UE OPTIONNELLE Filière MANAGEMENT (uniquement étudiants MPI et MPM)</i> | | | | | | | | | | | |
| Mi 513a | Achats et relations fournisseurs | 20 | 1 | P. GOLDSTEIN | | 20 | | | TD | | 10 |
| Mi 513b | Management des coûts | 22 | 1 | J-F. LEFEVRE | | 20 | | | | 2 | 12 |
| Mi 512 | Code de la commande publique | 18 | 1 | J-P. DEVAUX | 10 | 6 | | | TD | 2 | 12 |
| Mi 513d | Outil de gestion de projet (MS Project) | 12 | 0,5 | S. GRENAT - P. FREY | | 12 | | | TD | | 10 |
| Mi 513e | Gestion financière | 22 | 1,5 | J-F. LEFEVRE | | 20 | | | | 2 | 15 |
| Mi 513f | Finance appliquée au secteur aéronautique - étude de cas | 14 | 1 | J-F. LEFEVRE | | 12 | | | | 2 | 15 |
| Mi 513g | Integrated Logistic Support & Integrated In service Support (MCO) | 26 | 2 | A. PIZEL | 24 | | | | | 2 | 15 |
| Pole "Aeronautics & Space" Students must choose 1 option according to their major | | | | | | | | | | | |
| <i>Autonomous airborne systems (SAA option)</i> | | | | | | | | | | | |
| In 511 | Intelligent Controls | 28 | 1,5 | J. MAURICIO ROSARIO | 10 | | 16 | | TP | 2 | 15 |
| Au 514 | Nonlinear systems control | 32 | 2 | J. MAURICIO ROSARIO | 10 | 12 | 8 | | | 2 | 18 |
| In 512 | Distributed intelligent systems | 26 | 2,5 | A. OZTURK | 10 | 16 | | | Project | | 30 |
| Au 515 | Drones & visual servoing | 34 | 2 | J. CHAHAL | 12 | 8 | 12 | | TP | 2 | 25 |
| Au 516 | Cursus project: Dynamic planning of autonomous navigation | 24 | 3 | J. GUSTAVE | 4 | | | 20 | Project | | 40 |
| <i>Embedded information management & processing (TIE option)</i> | | | | | | | | | | | |
| In 513 | Embedded Real-time operating systems | 28 | 2 | F. BONNEFOI | 8 | | 20 | | TP | | 16 |
| EI 511 | Embedded systems: image processing with FPGA | 18 | 1 | M. VASILEVSKI | 8 | 10 | | | Project | | 15 |
| In 518 | High Performance Computing | 20 | 1 | G. THERIN | 8 | 10 | | | | 2 | 12 |
| Te 511 | EM compatibility & antennas | 26 | 2 | M. SMAIL | 16 | 8 | | | | 2 | 23 |
| Te 513 | Cursus project | 24 | 3 | M. SMAIL - O. EL HAMMAL | 4 | | | 20 | Project | | 35 |
| Te 514 | Object localization through wireless sensors networks | 28 | 2 | S. FORTUNATI | 16 | 10 | | | TD | 2 | 25 |
| <i>Airframe and materials (CAE option)</i> | | | | | | | | | | | |
| Aé 513 | Vertical flight | 28 | 2 | C. MARTINAND | 6 | 12 | 8 | | | 2 | 12 |
| Mé 514 | Multi-body mechanical simulation | 21 | 1,5 | P. SERRE | | | 21 | | TP | | 18 |
| Mé 515 | Calculation in structural materials | 24 | 1,5 | A. BENELFELLAH | 10 | 12 | | | | 2 | 17 |
| Mé 516 | Advanced materials sustainability | 18 | 1,5 | A. BENELFELLAH | 8 | 8 | | | | 2 | 15 |
| Mé 517 | Nonlinear numerical simulation in structural mechanics | 18 | 1,5 | A. BENELFELLAH | | | 18 | | BE | | 20 |
| Mé 518 | Cursus project: Finite Element Method for structures calculation (FEM) | 38 | 3 | W. LARBI | | | 20 | 18 | TP Project | | 40 |
| <i>Energy and engines (EMO option)</i> | | | | | | | | | | | |
| En 511 | Cursus project: Turbomachinery and design project for a turbojet engine | 44 | 3 | C. DEVAUX | 14 | | | 28 | Project | 2 | 35 |
| En 512 | Combustion | 16 | 1 | R. BERTOSSI | 3 | 11 | | | TD | 2 | 15 |
| En 513 | Space propulsion systems | 26 | 2 | DUFOUR-COLLINET-MAGNIANT | 16 | 8 | | | | 2 | 15 |
| En 517 | Introduction to Electrical propulsion | 9 | 1 | S. MAZOUFFRE | 8 | | | | | 1 | 5 |
| En 514 | Analytical and numerical calculations in heat transfer | 16 | 1 | R. BERTOSSI | 4 | 12 | | 4 | TD | | 12 |
| Mf 514 | Aeroacoustics | 22 | 1,5 | R. PEREZ RAMOS | 8 | 8 | | 4 | TD | 2 | 15 |
| Mf 515 | Turbulence | 16 | 1,5 | W. ABASSI | 8 | 6 | | | | 2 | 20 |
| <i>Space, launchers and satellites (ELS option)</i> | | | | | | | | | | | |
| En 513 | Space propulsion systems | 26 | 2 | DUFOUR-COLLINET-MAGNIANT | 16 | 8 | | | | 2 | 15 |
| En 515 | Electric and nuclear propulsion for space | 34 | 2 | S. MAZOUFFRE - R. PEREZ RAMOS | 32 | | | | | 2 | 25 |
| Sp 517 | Launchers and Satellites design | 44 | 2,5 | V. ROBERT et J. DESMARS | | 44 | | | Project | | 30 |
| Sp 518 | Satellites prototypes | 7 | 0,5 | T. GARNIER | | | | 7 | | | 7 |
| Sp 515 | Space telecommunications (for ELSS students) | 22 | 1 | S. FORTUNATI | 16 | 4 | | | TD | 2 | 20 |
| Sp 516 | Space telecommunications - Applications (for ELSS students) | 20 | 3 | S. FORTUNATI | 16 | 4 | | | Project | | 30 |
| Sp 513 | Payload integration and launchers (for ELSV students) | 22 | 1 | S. DUPRE | 16 | 4 | | | | 2 | 15 |
| Sp 514 | Cursus project: Conception of a space mission II (for ELSV students) | 20 | 3 | S. MAZOUFFRE | | | | 20 | Project | | 25 |
| <i>UE OPTIONNELLE MPI (management des projets industriels)</i> | | | | | | | | | | | |
| Mi 514a | Négociations internationales | 14 | 1 | F. PELOSSE | | 14 | | | TD | | 10 |
| Mi 514b | Contrôle de gestion | 14 | 1 | J-F. LEFEVRE | | 12 | | | | 2 | 12 |
| Mi 514c | Evaluation financière des projets | 14 | 1 | J-F. LEFEVRE | | 12 | | | | 2 | 12 |
| Mi 514d | Analyse de la performance commerciale | 17 | 1 | F. PELOSSE | | 16 | | | | 1 | 12 |
| Mi 514i | Challenge "négociations commerciales" | 2 | 0,5 | J-F. LEFEVRE ; F. PELOSSE ; P. GOLDSTEIN | | | 2 | | Oral defence | | 8 |

| | | | | | | | | | | | |
|---|--|----|-----|----------------------------|----|----|----|----|--------------|---|----|
| Mi 514e | Analyse et gestion des risques des projets industriels | 18 | 1 | R. DERBEL | | 16 | | | TD | 2 | 12 |
| Mi 514f | Financement des projets industriels | 14 | 1 | J-F. LEFEVRE | | 12 | | | | 2 | 12 |
| Mi 514g | Réponse à appel d'offres | 13 | 1 | F. RICCI | 12 | | | | IC | 1 | 12 |
| Mi 514h | Simulation informatisée à la gestion d'entreprise | 18 | 1,5 | J-F LEFEVRE | | | | 20 | Project | | 25 |
| UE OPTIONNELLE MPM (management de la production et du MCO) | | | | | | | | | | | |
| Mi 515a | Journée Etude de cas SLI | 12 | 0,5 | R. GRIVAUX | | | | 12 | Etude de cas | | 8 |
| Mi 515b | Approvisionnement et gestion des stocks | 14 | 0,5 | J-F. LEFEVRE | | | 12 | | | 2 | 8 |
| Mi 515c | Techniques de gestion de la Qualité | 22 | 1,5 | O. TERRIEN | 12 | 8 | | | | 2 | 12 |
| Mi 515d | Supply chain (approfondissement) | 17 | 1 | A. PIZEL | 16 | | | | | 1 | 12 |
| Mi 515e | Contrôle de gestion de la production | 22 | 1,5 | J-F. LEFEVRE | | 20 | | | | 2 | 15 |
| Mi 515h | Projet compagnie aérienne | 6 | 2 | J-F. LEFEVRE | | | | 6 | Project | | 35 |
| Mi 515f | Stratégie de maintenance | 12 | 1 | V. PERRARD - J. NAVARATNAM | 6 | 6 | | | Project | | 12 |
| Mi 515g | Gestion de production | 20 | 1 | V. PERRARD - J. NAVARATNAM | 20 | | | | Project | | 15 |

AERO 3: Undergraduate courses

Incomings

| SPRING SEMESTER = "S6" = 3rd year | | | | | | | | | | | | | |
|--|---|------|-----------------|------------------|----------------|----------|-------------|-----------------|-----------------|--------------------|----------------|---------|---------|
| Modules | Scheduled hours | ECTS | In-class hours* | | | | Assessments | | | Out-of-class hours | Teaching Units | | |
| | | | Lectures | Tutorial classes | Practical work | Projects | Assignts | Mid-term exams* | Final exams* | | | | |
| Basic Sciences 2 | | | | | | | | | | | | | |
| AnMa321 | Differentiable optimization 1 | 26 | 2,5 | 6 | 10 | | 8 | | Project | 2 | 30 | PSF 32 | |
| AnMa322 | Numerical solving of integrals and ODE | 25 | 2 | 8 | 8 | 6 | 2 | PW | Project | 1 | 25 | | |
| AnMa323 | Finite difference method | 18 | 1,5 | 6 | 4 | 4 | 4 | PW | | Project | 20 | | |
| Engineering sciences - Signal and Systems | | | | | | | | | | | | | |
| AnIn321 | Networks of smart devices | 24 | 1,5 | 14 | | 8 | | | PW | | 2 | 15 | PSIS 31 |
| AnIn322 | Operating systems | 18 | 1,5 | 12 | | 4 | | | PW | | 2 | 15 | |
| AnIn323 | C++ programming | 24 | 2 | | | 20 | | | PW | | 4 | 30 | |
| AnMa324 | Differentiable optimization 2 | 26 | 2 | 6 | 8 | | 10 | | Project | 2 | 25 | PSIS 32 | |
| AnMa325 | Data and decision science 2 | 19 | 1,5 | 6 | 4 | 4 | 4 | | Project | 1 | 20 | | |
| AnAu323 | Linear state space control | 23 | 1,5 | 8 | 6 | | 8 | | Project | 1 | 20 | | |
| AnAu322 | Microcontroller programming | 17 | 1,5 | 6 | | 10 | | | PW | | 1 | 15 | |
| AnEI321 | Digital electronics | 23 | 2 | 10 | 10 | | | | | 1 | 2 | 20 | PSIS 33 |
| AnEI322 | Introduction to programmable logic blocks (FPGA) | 24 | 2 | 5 | | 17 | | | PW | | 2 | 20 | |
| AnTé321 | Aeronautical telecommunication systems | 20 | 1,5 | 12 | 6 | | | | MCQ | | 2 | 15 | |
| AnTé322 | Digital signal processing | 39 | 3 | 14 | 14 | 8 | | | PW | 1 | 2 | 30 | |
| Engineering sciences - Vehicles | | | | | | | | | | | | | |
| AnMé321 | General mechanics 2 | 29 | 2 | 12 | 12 | | | | | 2 | 3 | 20 | PSIV 31 |
| AnMé322 | Introduction to FEM | 18 | 1,5 | 8 | 8 | | | | | | 2 | 15 | |
| AnMé323 | CAD (Catia) | 19 | 2 | | | | 18 | | Project | | 1 | 30 | |
| AnMé324 | Continuum mechanics | 40 | 3 | 18 | 18 | | | | | 2 | 2 | 35 | |
| AnMé325 | Materials science | 18 | 1,5 | 8 | 8 | | | | Contin. assess. | | 2 | 15 | |
| AnEn321 | Introduction to turbomachinery | 26 | 2 | 12 | 8 | | 4 | | Project | | 2 | 25 | PSIV 32 |
| AnEn322 | Heat transfers 2 | 23 | 1,5 | 6 | 6 | 9 | | | PW | | 2 | 15 | |
| AnEn323 | Applied thermodynamics | 32 | 2,5 | 8 | 8 | 6 | 8 | | Contin. assess. | | 2 | 25 | |
| AnAu324 | Modeling and dynamical analysis of aircrafts | 15 | 1 | 6 | 4 | | 4 | | Project | | 1 | 15 | PSIV 33 |
| AnMf321 | Aerodynamics 2 | 24 | 2 | 10 | 8 | 4 | | | PW | | 2 | 25 | |
| AnMf322 | Introduction to CFD | 14 | 1 | 2 | 4 | 8 | | | | | PW | 8 | |
| Business knowledge and occupational integration 2 | | | | | | | | | | | | | |
| AnSh322 | Prospective | 12 | 1 | 2 | 10 | | | | Contin. assess. | | Present. | 10 | PCIP 32 |
| AnSh323 | Corporate social responsibility | 16 | 1 | 4 | 12 | | | | | | Present. | 15 | |
| AnSh326 | The Digital Collage | 3 | 0,5 | | | | 3 | | | | Attendance | | |
| Languages 2 | | | | | | | | | | | | | |
| FLEb | French as a foreign language and intercultural seminars | 32 | 6 | 30 | | | | | Contin. assess. | Project | 2 | 25 | |
| AnLa321 | English 2 | 19 | 1,5 | | 12 | | 6 | | Contin. assess. | 1 | Present. | 15 | |

* Hours

SYS 408

36

365

VEH 409

36

368

Subjects list and credits
(School Year 2023-2024)
AERO 4 (Promo 2025)

| | | |
|-----|-----|--------------|
| SYS | VEH | majeures |
| ✓ | | SET |
| ✓ | | SM |
| ✓ | ✓ | ELSS or ELSV |
| | ✓ | EP |
| | ✓ | MS |

Spring semester = "S8" = 1st year of Master

| Code | Subjects | Teaching hours & exams | ECTS credits | Teachers | Lectures | Tutorials (TD) | Practical work (TP) | Projects | Marked Assignments | Exams | Personal work |
|---|---|------------------------|--------------|-------------------------|----------|----------------|---------------------|----------|--------------------|-------|---------------|
| Pole "Human Sciences & Languages" COMMON CORE FOR ALL STUDENTS | | | | | | | | | | | |
| Sh 421 | Environmental Ethics | 12 | 1,5 | A. SORIYA | | 12 | | | TD Project | | 20 |
| Sh 422 | Sociologie des entreprises et des organisations (in French) | 12 | 1 | JF. De JUNNEMANN | | 10 | | | | 2 | 12 |
| Sh 423 | Droit social (in French) | 11 | 1 | F. BONNARD | | 10 | | | | 1 | 12 |
| FLEb | French & Intercultural seminar - COMPULSORY | 30 | 6 | T. MINOT S. DESCAVES | 30 | | | | | | 25 |

Pole "Corporate knowledge & Professional skills" COMMON CORE FOR ALL STUDENTS

| Cours Sciences de l'entreprise | | | | | | | | | | | |
|--------------------------------|--|----|-----|--------------|---|----|--|--|----|---|----|
| Mi 421 | Qualité - Réglementation - Normes - Lean (in French) | 13 | 0,5 | O. TERRIEN | 6 | 6 | | | | 1 | 10 |
| Mi 422 | Principes de stratégie d'entreprise (in French) | 12 | 0,5 | V. JEANNERET | | 12 | | | TD | | 10 |
| Mi 423 | Gestion d'entreprise et Analyse financière (in French) | 26 | 2 | JF. LEFEVRE | | 24 | | | | 2 | 20 |

Pole "Engineering Sciences" - COMMON CORE FOR ALL STUDENTS

| Engineering Sciences | | | | | | | | | | | |
|--------------------------------------|--|----|-----|------------------------|----|---|----|--|---------|-----|----|
| Au 421 | Graphic representation of dynamic multilinear systems | 22 | 1,5 | A. DEBIANE | 10 | | 10 | | TP | 2 | 15 |
| Mi 426 | Principes de base de Conception Avion et d'éco-conception - Industrialisation et Méthode de production (in French) | 11 | 1 | O. TERRIEN | 10 | | | | | 1 | 10 |
| Aé 421 | Flight dynamics: aircraft flying qualities | 22 | 1,5 | P. YAZIGI | 12 | 8 | | | TD | 2 | 25 |
| Electives and Initiation to Research | | | | | | | | | | | |
| Mo 421a..i | All options except ELS : Elective module 1 (8 choices) | 22 | 1,5 | depends of the module | 20 | | | | | 2 | 20 |
| Sp 421 | ELS option : Astronomy, Astrometry | 20 | | V. ROBERT | 20 | | | | Project | | 22 |
| Mo 422a..i | All options except ELS : Elective module 2 (8 choices) | 22 | 1,5 | depends of the module | 20 | | | | | 2 | 20 |
| Sp 422 | ELS option : Astrophysics | 20 | | J. DESMARD | 20 | | | | Project | | 22 |
| Ci 421a...r | Introducing Project to Research or Innovation PIRI | 20 | 2 | depends of the project | 20 | | | | | TBD | 24 |

Pole "Engineering Sciences" - 1 major/student

| Major SYSTEMS (only for students with ELS, SET or SM options) | | | | | | | | | | | |
|---|--|----|-----|-------------------------|----|----|----|----|---------|---|----|
| In 421 | Complex information systems modelling | 11 | 0,5 | F. BONNEFOI | 4 | 6 | | | | 1 | 10 |
| In 422 | Real Time Information Systems | 24 | 2 | J. ROSARIO | 7 | | 16 | | TD | 1 | 20 |
| In 424 | Swarm intelligent systems | 20 | 2 | J. GUSTAVE - J. ALVAREZ | 4 | | 16 | | | | 25 |
| Ma 422 | Introduction to Machine Learning | 20 | 1,5 | L. GHARSALLI | 10 | | 10 | | project | | 20 |
| Au 425 | Physical approach to aeronautical automated systems | 25 | 1,5 | Y. SELLAMI | 8 | | 16 | | TP | 2 | 16 |
| Major VEHICLES (only for students with ELS, EP or MS options) | | | | | | | | | | | |
| Mf 421 | Fluid Dynamics | 27 | 2 | W. ABASSI | 8 | 8 | 9 | | TD / TP | 2 | 25 |
| En 426 | Electrical and hydrogen production | 17 | 1,5 | B. WIESENFELD | | | | 17 | Project | | 20 |
| Mé 421 | Theory of plates and shells | 22 | 2 | M. GALIMBERTI | 8 | 12 | | | | 2 | 20 |
| Mé 422 | Numerical calculations in mechanics and structures (FEM) | 17 | 2 | W. LARBI | | | 16 | 1 | Project | | 25 |

| Code | Subjects | Teaching hours & exams | ECTS credits | Teachers | Lectures | Tutorials (TD) | Practical work (TP) | Projects | Marked Assignments | Exams | Personal work |
|---|--|------------------------|--------------|---------------------------|----------|----------------|---------------------|----------|--------------------|-------|---------------|
| Pole "Aeronautics and Space" - 1option/student | | | | | | | | | | | |
| <i>SET option "Embedded systems and telecommunications"</i> | | | | | | | | | | | |
| EI 421 | Advanced applications of RPGA circuits | 20 | 1,5 | S. BENABID | 4 | 10 | 6 | | TD-TP | | 15 |
| Té 423 | Digital Signal Processors | 20 | 2 | TBC | 8 | 10 | | | | 2 | 25 |
| Té 421 | Telecommunications: principles and liaison balance | 22 | 2 | S. FORTUNATI | 12 | 8 | | | | 2 | 18 |
| Té 422 | Guided propagation and hyperfrequencies | 18 | 1,5 | M. SMAIL | 10 | 6 | | | | 2 | 15 |
| <i>SM option "Mechatronic systems"</i> | | | | | | | | | | | |
| Au 424 | Power electronics and actuators in aeronautics | 16 | 1,5 | A. DEBIANE | 8 | | 8 | | TP | | 18 |
| In 425 | Guidance principles of autonomous systems | 26 | 2 | J. GUSTAVE J. ALVAREZ | 8 | 4 | 12 | | TP | 2 | 20 |
| In 426 | Introduction to robotics | 20 | 1,5 | J. GUSTAVE J. ALVAREZ | 8 | | 12 | | TP | | 18 |
| In 423 | Embedded networks | 20 | 2 | F. BONNEFOI | 4 | | 15 | | TP | 1 | 25 |
| <i>EP option "Energetics and Propulsion"</i> | | | | | | | | | | | |
| En 422 | Turbomachines design | 42 | 2,5 | C. DEVAUX | 20 | 20 | | | TD | 2 | 24 |
| En 423 | Thermal engines for drone & light aircraft | 24 | 2 | R. BERTOSSI | 6 | | | 16 | Project | 2 | 18 |
| En 424 | Nuclear Energy and Propulsion | 22 | 2 | R PEREZ RAMOS | 10 | 10 | | | | 2 | 20 |
| En 425 | Initiation to aeroacoustics | 9 | 0,5 | R PEREZ RAMOS | 4 | 4 | | | | 1 | 10 |
| <i>MS option "Mechanics and Structures"</i> | | | | | | | | | | | |
| Mé 424 | CAD: CATIA | 19 | 2 | P.GAUDIN P.VINTER | | | | 19 | Project | | 25 |
| Mé 425 | Metallic and composite materials | 34 | 2,5 | JF.BEGUE A.BENELFELLAH | 12 | 8 | 12 | | TP | 2 | 18 |
| Mé 427 | Aircraft structures design | 13 | 0,5 | JF. BEGUE | 6 | 6 | | | | 1 | 12 |
| Mé 423 | Advanced Materials | 29 | 2 | A.BENELFELLAH | 10 | 8 | 9 | | | 2 | 18 |
| <i>ELS option "Space, Launchers and Satellites"</i> | | | | | | | | | | | |
| Sp 423 | Space mechanics | 26 | 2 | V. ROBERT | 12 | 12 | | | Project | 2 | 20 |
| Sp 424 | Project : Atmospheric reentry and mission concept | 20 | 2 | V. LAGO | 4 | | | 16 | Project | | 20 |
| Sp 425 | Space optics | 22 | 1,5 | R. LEGOFF | 12 | 8 | | | | 2 | 15 |
| Sp 426 | Plasma physics, electrical and plasma propulsion | 20 | 1,5 | A. LEKIC | 10 | 8 | | | | 2 | 18 |
| Sp 427 | Numerical methods for space applications (COMSOL) (for ELSV students only) | 10 | 1 | J. DESMARS | 6 | 4 | | | Project | | 15 |