



# **Course Catalogue 2026-2027**

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## Modules list

### DIT

- T-PRE-500 – Python Seminar – 2 ECTS
- T-WEB-500 – Web Seminar – 4 ECTS
- T-WEB-501 – Job Board – 4 ECTS
- T-ENT-500 – Portfolio – 5 ECTS
- T-JAV-500 – Java Seminar – 4 ECTS
- T-JAV-501 – Video Game – 5 ECTS
- T-CEN-500 – Digital transformation – 4 ECTS
- T-NSA-500 – Devops Seminar – 2 ECTS
- T-DOP-501 – Devops Popeye – 2 ECTS
- T-DOP-502 – MyMarvin – 2 ECTS
- T-FLE-500 - French language – 2 ECTS
- T-PRO-500 - Professional Project – 5 ECTS
- T-CAP-500 - Capstone – 15 ECTS

### DIT Advanced

- I-DEV-700 – Web Seminar – 5 ECTS
- I-DEV-701 – Trinity 1 Devops – 8 ECTS
- I-DIT-700 – Digital Transformation – 6 ECTS
- I-DEV-702 – Trinity 2 Web development – 8 ECTS
- I-DEV-801 – Trinity 3 Application development – 7 ECTS
- I-IOT-801-IOT – Smart Trash Bin – 6 ECTS
- I-DAT-801 – AI Zoidberg – 7 ECTS
- I-NSA-801 – Cybersecurity – 7 ECTS
- I-FLE-700 - French language – 2 ECTS
- I-CAP-700 - Capstone – 4 ECTS

## INTRODUCTION

Epitech has been a leading French institution renowned since 1999 for its unique educational model, designed to transform students into high-level IT professionals. Unlike traditional academic environments, Epitech focuses on **project-based learning** and **peer-to-peer collaboration**, preparing students for the fast-paced reality of the tech industry. *"Learning by doing"* and *"learning how to learn"* are the core pillars of our pedagogy.

Epitech's pedagogy is not about memorizing theory for an exam. Instead, progress is measured through the **validation of practical competencies** acquired during technical projects.

The validation of ECTS is confirmed by validating competencies, and not by having a minimum mark.

There are 2 types of assessments:

- If the module is a **seminar** – The method of validation is by continuous assessment. One or more associated skills can be validated via a series of successful exercises.
- If the module is only **1 project** – One member of the pedagogical team will review it at the end to see if the competencies linked to the project are well acquired. It includes an oral, a presentation, a project review, and a code review. The project is validated (and thus, the associated ECTS) if the student validates 50% of the set of skills linked to the project.

Each module consists of one or several projects with specific technical requirements. Your grade reflects your ability to apply technical concepts to solve real-world problems. Each module includes mandatory sessions to attend, such as:

- The Kick-off: 30 min session where the pedagogical team explains the objectives of the project.
- A Bootstrap: A 2-hour session where students practice and dive deep into the new technical content of the project.
- Follow-ups: A weekly 30 min check-in of the project progress.
- Delivery: An assessment done for a 1-project module, explained above.

**Note to International Students:** This system rewards autonomy, curiosity, and persistence. Your success depends on your ability to iterate on your code and collaborate with your peers to overcome technical challenges.

There are 2 types of programs available:

- DIT – Discover IT: Open to students who have none or a little knowledge of programming and IT, available for 1 or 2 semesters.
- DIT Advanced – Discover IT Advanced: Open to students with > 2 years of programming.

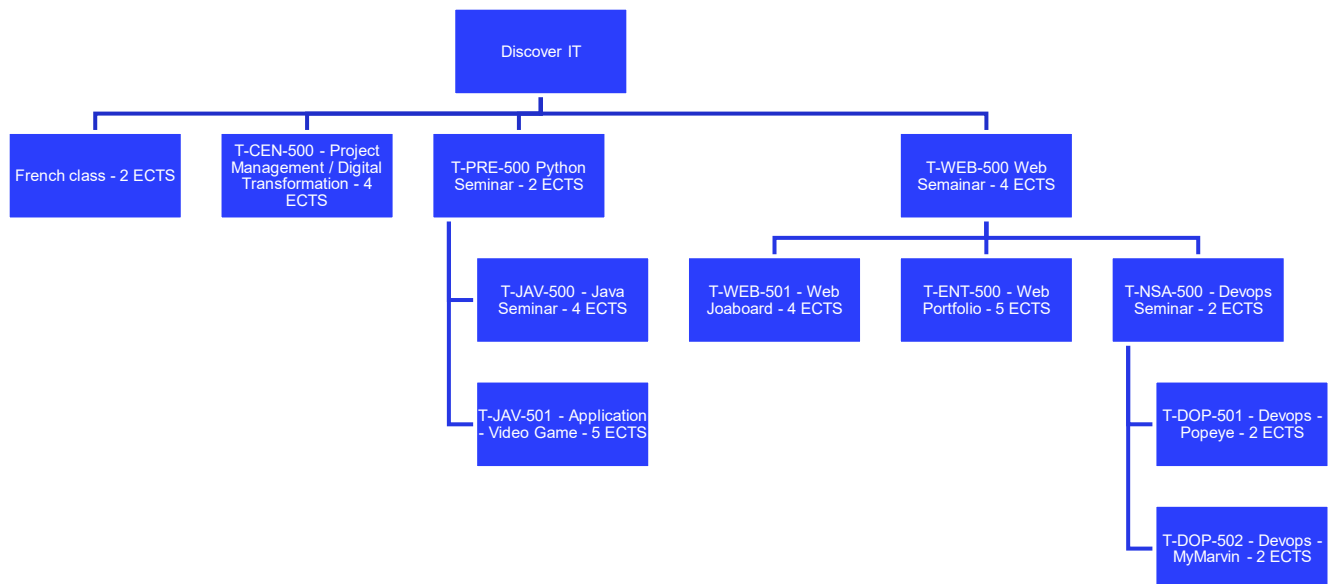
## DIT – Discover IT

### One Semester

36 credits available

### Main Topics

- Web
- Software Development
- Devops
- Application development
- Project Management / Digital transformation
- Video game / Graphical programming



**T-PRE-500 – Python Seminar**

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Type                         | Mandatory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Theme                        | Software – Python Seminar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Duration                     | 5 days – 40H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Size of group                | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Prerequisites                | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Objectives                   | <ul style="list-style-type: none"><li>- Learn basic programming logic</li><li>- Debugging</li><li>- Discovering IDE</li><li>- Variables, Conditions, Loops, Functions, Syntax, etc.</li><li>- Libraries</li></ul>                                                                                                                                                                                                                                                                                                           |
| Content                      | Extra step (or stirrup) before the swimming pools, for students who would not have done any (or very little) computing before. This pool helps to level and homogenize students before the "real" start of the curriculum. To focus as much as possible on programming logic, the pool will be in interpreted Python. The aim is to have enough knowledge and skills (logic, variables, conditions, loops, functions, syntax, vocabulary, environment) to start the web pools that follow (without actually doing the web). |
| Name of the person in charge | Pierre COMPAGNON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

**- T-WEB-500 – Web Seminar**

|                              |                                                                                                                                                                                                                                                                                                                                |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 4                                                                                                                                                                                                                                                                                                                              |
| Type                         | Mandatory                                                                                                                                                                                                                                                                                                                      |
| Theme                        | Web Seminar                                                                                                                                                                                                                                                                                                                    |
| Duration                     | 80 hours – 10 days                                                                                                                                                                                                                                                                                                             |
| Size of group                | 1                                                                                                                                                                                                                                                                                                                              |
| Prerequisites                | none                                                                                                                                                                                                                                                                                                                           |
| Objectives                   | <ul style="list-style-type: none"><li>- Learn the basic of web programming languages, development</li><li>- Understand the basic principles of web development</li><li>- Discovering the back-end/front-end difference</li><li>- Discover how to use a database</li><li>- Basic use of Github</li><li>- Use of Linux</li></ul> |
| Content                      | 10 days of daily exercises + mini projects will guide the learners to discover some usual tools for web development, such as HTML, CSS, JS, PHP, AJAX                                                                                                                                                                          |
| Name of the person in charge | Pierre COMPAGNON                                                                                                                                                                                                                                                                                                               |

- **T-WEB-501** – JobBoard

|                              |                                                                                                                               |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 4                                                                                                                             |
| Type                         | Mandatory                                                                                                                     |
| Theme                        | Web JobBoard                                                                                                                  |
| Duration                     | 2 weeks – 80H                                                                                                                 |
| Size of group                | 2                                                                                                                             |
| Prerequisites                | T-WEB-500                                                                                                                     |
| Objectives                   | JobBoard Project - This project aims at realizing a full-stack website to store and display an online job advertisement board |
| Content                      | Web-dev, HTML, CSS, JS, PHP, Ajax, Github, prod, Databases, API, CRUD, SQL,                                                   |
| Name of the person in charge | Pierre Compagnon                                                                                                              |

- **T-ENT-500** – Portfolio

|                              |                                                                                                                                                                                                                                                                                                                                   |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 5                                                                                                                                                                                                                                                                                                                                 |
| Type                         | Elective                                                                                                                                                                                                                                                                                                                          |
| Theme                        | Web - Portfolio                                                                                                                                                                                                                                                                                                                   |
| Duration                     | 5 Weeks – but 15 days development – 120 hours                                                                                                                                                                                                                                                                                     |
| Size of group                | 1                                                                                                                                                                                                                                                                                                                                 |
| Prerequisites                | T-WEB-500                                                                                                                                                                                                                                                                                                                         |
| Objectives                   | Create a digital presentation portfolio that showcases your talents and best achievements to the public, such as potential employers. Tools and language free to use, up to the student.                                                                                                                                          |
| Content                      | <ul style="list-style-type: none"><li>– web development</li><li>– showcase</li><li>– written expression</li><li>– storytelling</li><li>– reflexivity</li><li>– documentation</li><li>– self assessment</li><li>– content management</li><li>– hosting &amp; deployment</li><li>– job search</li><li>-Transversal skills</li></ul> |
| Name of the person in charge | Pierre Compagnon                                                                                                                                                                                                                                                                                                                  |

- **T-JAV-500** – Java Seminar

|                              |                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 4                                                                                                                                                                                                                                                                                                                                                                |
| Type                         | Mandatory                                                                                                                                                                                                                                                                                                                                                        |
| Theme                        | Application development – Java Seminar                                                                                                                                                                                                                                                                                                                           |
| Duration                     | 11 days – 88 hours                                                                                                                                                                                                                                                                                                                                               |
| Size of group                | 1                                                                                                                                                                                                                                                                                                                                                                |
| Prerequisites                | T-PRE-500                                                                                                                                                                                                                                                                                                                                                        |
| Objectives                   | Discover Java programming language applied to basic application development.                                                                                                                                                                                                                                                                                     |
| Content                      | “Pool” course. 11 days of exercises + mini projects will guide the learners to discover some usual tools for app development, such as java programming language, its libraires and frameworks. <ul style="list-style-type: none"><li>- Application development,</li><li>- Object oriented programing</li><li>- Design patterns</li><li>- GUI / UI / UX</li></ul> |
| Name of the person in charge | Pierre Compagnon                                                                                                                                                                                                                                                                                                                                                 |

- **T-JAV-501** – Video Game

|                              |                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 5                                                                                                                                                                                                                                                                                                                                                    |
| Type                         | Elective                                                                                                                                                                                                                                                                                                                                             |
| Theme                        | Application development – Video Game                                                                                                                                                                                                                                                                                                                 |
| Duration                     | 3 weeks – 120H hours                                                                                                                                                                                                                                                                                                                                 |
| Size of group                | 2                                                                                                                                                                                                                                                                                                                                                    |
| Prerequisites                | T-JAV-500                                                                                                                                                                                                                                                                                                                                            |
| Objectives                   | Develop a game on a basic 2D grid, using the OOP principles and the Java language. Groups can choose to focus on a single game genre and exploit it to the fullest, or they can combine several genres to create a coherent gameplay experience. As long as they use Object-Oriented Programming (OOP) concepts intelligently, anything is possible. |
| Content                      | <ul style="list-style-type: none"><li>- Application development,</li><li>- Object oriented programing</li><li>- Design patterns</li><li>- GUI / UI / UX</li><li>- Video game logic</li><li>- Integrations of assets</li><li>- Libraries</li></ul>                                                                                                    |
| Name of the person in charge | Pierre Compagnon                                                                                                                                                                                                                                                                                                                                     |

- **T-CEN-500** – Digital Transformation

|                              |                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 4                                                                                                                                                                                                                                                                                                                                                |
| Type                         | Elective                                                                                                                                                                                                                                                                                                                                         |
| Theme                        | Project management – Digital transformation                                                                                                                                                                                                                                                                                                      |
| Duration                     | 8 Weeks – 80 hours (10H / Week estimation)                                                                                                                                                                                                                                                                                                       |
| Size of group                | 2                                                                                                                                                                                                                                                                                                                                                |
| Prerequisites                | none                                                                                                                                                                                                                                                                                                                                             |
| Objectives                   | As team leader of an imaginary revolutionary product, provide all the needed steps to develop it, from prototyping to release, including project management of the developer team, and much more.                                                                                                                                                |
| Content                      | <ul style="list-style-type: none"><li>- Proof of concept</li><li>- UI/UX</li><li>- Piloting project management</li><li>- Project planning</li><li>- Gantt / Agile tools introduction</li><li>- Personas / Interviews</li><li>- Resources management</li><li>- Risk management</li><li>- Budget handling</li><li>- Communication skills</li></ul> |
| Name of the person in charge | Pierre Compagnon                                                                                                                                                                                                                                                                                                                                 |

- **T-NSA-500** – Devops Seminar

|               |                                                                                                                                                                                                                               |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS          | 2                                                                                                                                                                                                                             |
| Type          | Elective                                                                                                                                                                                                                      |
| Theme         | Devops Seminar                                                                                                                                                                                                                |
| Duration      | 1 Week – 40H                                                                                                                                                                                                                  |
| Size of group | 1                                                                                                                                                                                                                             |
| Prerequisites | T-WEB-500                                                                                                                                                                                                                     |
| Objectives    | “Pool” seminar to discover Devops intensively – 5 days of daily activities and exercises                                                                                                                                      |
| Content       | <ul style="list-style-type: none"><li>- Deployment</li><li>- Versioning</li><li>- Ansible</li><li>- Virtualization</li><li>- Docker</li><li>- Virtual Machine</li><li>- SSH</li><li>- OS Management</li><li>- MySQL</li></ul> |

|                              |                                                                                                                             |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
|                              | <ul style="list-style-type: none"><li>- PhpMyAdmin</li><li>- Configuring SSL / Firewall / API</li><li>- Scripting</li></ul> |
| Name of the person in charge | Pierre Compagnon                                                                                                            |

- **T-DOP-501** – Devops Popeye

|                              |                                                                                                                                                                                                                                                                                                                     |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 2                                                                                                                                                                                                                                                                                                                   |
| Type                         | Elective                                                                                                                                                                                                                                                                                                            |
| Theme                        | Devops - Popeye                                                                                                                                                                                                                                                                                                     |
| Duration                     | 1 Week – 40H hours                                                                                                                                                                                                                                                                                                  |
| Size of group                | 1                                                                                                                                                                                                                                                                                                                   |
| Prerequisites                | T-NSA-500                                                                                                                                                                                                                                                                                                           |
| Objectives                   | Master the basics of containerizing applications. You must containerize and define the deployment of a simple web poll application, composed of five elements. You must create some Docker images, respecting the provided specifications, and link and run them all together using Docker Compose – Project Popeye |
| Content                      | <ul style="list-style-type: none"><li>- Mastering Docker and Devops</li><li>- Containerization</li><li>- YAML</li><li>- Docker</li></ul>                                                                                                                                                                            |
| Name of the person in charge | Pierre Compagnon                                                                                                                                                                                                                                                                                                    |

- **T-DOP-502** – My Marvin

|               |                                                                                                                                                                                                                                                                                                                                                |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS          | 2                                                                                                                                                                                                                                                                                                                                              |
| Type          | Devops - MyMarvin                                                                                                                                                                                                                                                                                                                              |
| Theme         | Elective                                                                                                                                                                                                                                                                                                                                       |
| Duration      | 1 Week – 40 hours                                                                                                                                                                                                                                                                                                                              |
| Size of group | 2                                                                                                                                                                                                                                                                                                                                              |
| Prerequisites | T-DOP-501                                                                                                                                                                                                                                                                                                                                      |
| Objectives    | Project My Marvin - Setup the cornerstone of the Devops chain: the Continuous Integration & Continuous Delivery Pipeline. Use configuration as code to describe your wanted configurations in just one single file. Turn in a YAML file containing all the required configurations and use the job domain specific language to create elements |
| Content       | <ul style="list-style-type: none"><li>- Automation</li><li>- CI/CD - Pipelines</li><li>- Testing</li></ul>                                                                                                                                                                                                                                     |

|                              |                                                                                                            |
|------------------------------|------------------------------------------------------------------------------------------------------------|
|                              | <ul style="list-style-type: none"><li>- Configuration as code</li><li>- Jenkins</li><li>- Github</li></ul> |
| Name of the person in charge | Pierre Compagnon                                                                                           |

### - French language

|                              |                                              |
|------------------------------|----------------------------------------------|
| ECTS                         | 2                                            |
| Type                         | Mandatory                                    |
| Theme                        | Language skills                              |
| Duration                     | 1 semester – 2 hours / week                  |
| Size of group                | 1                                            |
| Prerequisites                | none                                         |
| Objectives                   | Validate A1 in French language               |
| Content                      | Basic words and sentences from everyday life |
| Name of the person in charge | Jérémy Carbonneaux                           |

## Full Year

60 credits available

### Content:

- DIT Semester 1 (above)
- Semester 2 including 30 credits based on:
  - o Professional project (potentially an internship) – 5 credits per month done
  - o Technical side projects are based on themes of the first semester. 6 credits per technical projects (projects eligible by the student based on all specialties available on the document)
  - o Personal projects (ECTS to estimate depending on the project workload)
  - o Capstone – 15 ECTS

## DIT Advanced – Discover IT – Advanced

### Semester 1 / Fall

30 credits available

#### I-DEV-700 – Web Seminar

|                              |                                                                                                                                                                                                                                                                                   |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 5                                                                                                                                                                                                                                                                                 |
| Type                         | Mandatory                                                                                                                                                                                                                                                                         |
| Theme                        | Web Seminar                                                                                                                                                                                                                                                                       |
| Duration                     | 3 weeks – 120H                                                                                                                                                                                                                                                                    |
| Size of group                | 3                                                                                                                                                                                                                                                                                 |
| Prerequisites                | None                                                                                                                                                                                                                                                                              |
| Objectives                   | Immersion into the pedagogy of Epitech, and series of exercises to do every 3 days. Create a web platform for a fictional client from scratch.                                                                                                                                    |
| Content                      | <ul style="list-style-type: none"><li>- functional programming</li><li>- design thinking</li><li>- APIs</li><li>- Devops</li><li>- Digital transformation</li><li>- mobile applications</li><li>- web development</li><li>- security</li><li>- databases</li><li>- SQL.</li></ul> |
| Name of the person in charge | Pierre Compagnon                                                                                                                                                                                                                                                                  |

#### I-DEV-701 – Trinity 1 - Devops

|               |                                                                                                                                                                                                                                                                                                                                                                    |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS          | 8                                                                                                                                                                                                                                                                                                                                                                  |
| Type          | Mandatory                                                                                                                                                                                                                                                                                                                                                          |
| Theme         | Devops – Trinity 1                                                                                                                                                                                                                                                                                                                                                 |
| Duration      | 6 weeks – 150H                                                                                                                                                                                                                                                                                                                                                     |
| Size of group | 3                                                                                                                                                                                                                                                                                                                                                                  |
| Prerequisites | None                                                                                                                                                                                                                                                                                                                                                               |
| Objectives    | You will learn how to design and implement continuous integration and continuous deployment (CI/CD) pipelines, containerize applications for multiple environments, and automate testing and deployments. By applying Devops practices to a real-world project, you'll gain the mindset and technical skills that companies expect from modern software engineers. |
| Content       | <ul style="list-style-type: none"><li>- Understand and apply the Devops methodology</li></ul>                                                                                                                                                                                                                                                                      |

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                              | <ul style="list-style-type: none"><li>- Design and implement a CI/CD pipeline for web and mobile applications</li><li>- Containerize applications using Docker and manage multiple environments (dev/prod)</li><li>- Configure and use GitLab CI/CD runners for automated workflows</li><li>- Integrate unit tests and quality checks into deployment processes</li><li>- Automate deployments to ensure zero-downtime delivery</li><li>- Apply security best practices in Devops workflows</li><li>- Document architecture, environments, and deployment pipelines</li></ul> |
| Name of the person in charge | Pierre Compagnon                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

**I-DIT-700 – Digital transformation**

|                              |                                                                                                                                                        |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 6                                                                                                                                                      |
| Type                         | Mandatory                                                                                                                                              |
| Theme                        | Digital Transformation                                                                                                                                 |
| Duration                     | 13 Weeks – 140 Hours                                                                                                                                   |
| Size of group                | 3                                                                                                                                                      |
| Prerequisites                | None                                                                                                                                                   |
| Objectives                   | Simulating a customized IT development project, students work in groups to find and develop the technical solution that best meets the client's needs. |
| Content                      | Resistance to change, product acceptance, web development, UX/UI, mockups, documentation, digital transformation, interviews, personas                 |
| Name of the person in charge | Pierre Compagnon                                                                                                                                       |

**I-DEV-702 – Trinity 2 – Web Development**

|               |                                                                                                                                                                                                                                                                                                                                                                      |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS          | 8                                                                                                                                                                                                                                                                                                                                                                    |
| Type          | Mandatory                                                                                                                                                                                                                                                                                                                                                            |
| Theme         | Web – Trinity 2                                                                                                                                                                                                                                                                                                                                                      |
| Duration      | 7 Weeks – 150 hours                                                                                                                                                                                                                                                                                                                                                  |
| Size of group | 3                                                                                                                                                                                                                                                                                                                                                                    |
| Prerequisites | none                                                                                                                                                                                                                                                                                                                                                                 |
| Objectives    | Full stack development module, as part of the creation of an e-commerce website. Deliver maintainable, testable and professionally presented full stack web solution, document a robust back-end architecture and API, design, implement and document an intuitive user interface providing a good UX, Develop software components to deliver value to stakeholders. |

|                              |                                                                                                                                                                                                                                  |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Content                      | Database management, design, unit testing, product management, back-end and front-end, open-source technologies, API, UI/UX, data security, login, JSON, Web Token, KPI Dashboard, digital transformation, interviews, personas. |
| Name of the person in charge | Pierre Compagnon                                                                                                                                                                                                                 |

### **French language**

|                              |                                              |
|------------------------------|----------------------------------------------|
| ECTS                         | 2                                            |
| Type                         | Elective                                     |
| Theme                        | Language skills                              |
| Duration                     | 1 semester – 2 hours / week                  |
| Size of group                | 1                                            |
| Prerequisites                | none                                         |
| Objectives                   | Validate A1 in French language               |
| Content                      | Basic words and sentences from everyday life |
| Name of the person in charge | Jérémy Carbonneaux                           |

### **Capstone**

|                              |                                                                                 |
|------------------------------|---------------------------------------------------------------------------------|
| ECTS                         | 4                                                                               |
| Type                         | Elective                                                                        |
| Theme                        | Free tech project                                                               |
| Duration                     | 1 semester – 100H                                                               |
| Size of group                | 1 to 3                                                                          |
| Prerequisites                | none                                                                            |
| Objectives                   | Create an innovative tech project that solves a real-world issue of your choice |
| Content                      | Tech dev, project management, product management, soft skills                   |
| Name of the person in charge | Pierre Compagnon                                                                |

## Semester 2 / Summer

30 credits available

### I-DEV-801 – Trinity 3 – Application development

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Type                         | Mandatory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Theme                        | Application development – Trinity 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Duration                     | 8 Weeks – 150hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Size of group                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Prerequisites                | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Objectives                   | <p>To boost competitiveness, a retail company needs your services to develop solutions to achieve several goals. You are tasked to develop two applications:</p> <ul style="list-style-type: none"><li>- a web application to optimize product management, supervise the sales and facilitate decision-making.</li><li>- a mobile application to improve the final customer's experience, simplify its purchasing process and enhance its satisfaction.</li></ul> <p>To be more agile and efficient, you decide to implement the Devops philosophy early in these two development phases.</p> |
| Content                      | API Integration, Authentication; Design Patterns; OOP; Camera; User Interface; User experience.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Name of the person in charge | Pierre Compagnon                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### I-IOT-801 – IOT Smart Trash Bin

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 6                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Type                         | Mandatory                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Theme                        | IOT – Smart trash bin                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Duration                     | 8 Weeks - 150                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Size of group                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Prerequisites                | None                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Objectives                   | <p>Creation of a system combining IoT and augmented reality to simulate and optimize a fictional public service in the city. A city wants to rebuild its waste system, true pain point for the inhabitants. To convince the mayor, you must demonstrate a fully functional prototype of connected trash cans loaded with various sensors (light, tilt, ...), to an AR application that overlays information on a smartphone camera feed.</p> |
| Content                      | IoT, VR, AR, Arduino, Unity, Smart city                                                                                                                                                                                                                                                                                                                                                                                                      |
| Name of the person in charge | Pierre Compagnon                                                                                                                                                                                                                                                                                                                                                                                                                             |

**I-DAT-801 – AI Zoidberg**

|                              |                                                                                                                                                                                                                                                                              |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 7                                                                                                                                                                                                                                                                            |
| Type                         | Mandatory                                                                                                                                                                                                                                                                    |
| Theme                        | AI – Data - Zoidberg                                                                                                                                                                                                                                                         |
| Duration                     | 8 weeks – 150 hours                                                                                                                                                                                                                                                          |
| Size of group                | 3                                                                                                                                                                                                                                                                            |
| Prerequisites                | none                                                                                                                                                                                                                                                                         |
| Objectives                   | Given some datasets containing a plethora of X-ray images, you will use various machine learning procedures (train-validation-test, cross validation, ...), tune your algorithms and document your data-scientist work to deliver a precious tool to help the medical staff. |
| Content                      | AI, algorithms, documentation, machine learning, data visualization, data science, image recognition, use of external libraries, unit testing, data mining                                                                                                                   |
| Name of the person in charge | Pierre Compagnon                                                                                                                                                                                                                                                             |

**I-NSA-801 - Cybersecurity**

|                              |                                                                                                                                                                                                                                                              |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECTS                         | 7                                                                                                                                                                                                                                                            |
| Type                         | Mandatory                                                                                                                                                                                                                                                    |
| Theme                        | Cybersecurity - CIA                                                                                                                                                                                                                                          |
| Duration                     | 8 Weeks – 150 hours                                                                                                                                                                                                                                          |
| Size of group                | 3                                                                                                                                                                                                                                                            |
| Prerequisites                | None                                                                                                                                                                                                                                                         |
| Objectives                   | A company called you because the previous (possibly unqualified) system administrator rage quit. You must investigate, scavenge and get administrator privileges on the existing infrastructure. Then find the leaks, secure the machines, add new services. |
| Content                      | Security, Hacking, Investigation, exploitation, bug hunting, patch, sysadmin, devops, virtualization                                                                                                                                                         |
| Name of the person in charge | Devops                                                                                                                                                                                                                                                       |

**French language**

|                              |                                              |
|------------------------------|----------------------------------------------|
| ECTS                         | 2                                            |
| Type                         | Elective                                     |
| Theme                        | Language skills                              |
| Duration                     | 1 semester – 2 hours / week                  |
| Size of group                | 1                                            |
| Prerequisites                | none                                         |
| Objectives                   | Validate A1 in French language               |
| Content                      | Basic words and sentences from everyday life |
| Name of the person in charge | Jérémy Carbonneaux                           |

**Capstone**

|                              |                                                                               |
|------------------------------|-------------------------------------------------------------------------------|
| ECTS                         | 4                                                                             |
| Type                         | Elective                                                                      |
| Theme                        | Free tech project                                                             |
| Duration                     | 1 semester – 100H                                                             |
| Size of group                | 1 to 3                                                                        |
| Prerequisites                | none                                                                          |
| Objectives                   | Create an innovative tech project answering a real problematic of your choice |
| Content                      | Tech dev, project management, product management, soft skills                 |
| Name of the person in charge | Pierre Compagnon                                                              |

**Full Year**

Content:

- DIT Semester 1 + Semester 2
- Free project (Capstone) 15 ECTS