

# Projects for ETSIST Incoming Students - PROJECT PROPOSAL

*Academic year 2024 / 2025*

<b>Project description</b>	
Project name: Sound processing algorithms in Python	
Academic year: 2024/25	Semester: ● Fall ● Spring
Starting date <sup>1</sup> : 12 September 2024 / 12 January 2025	Ending date <sup>2</sup> : 22 December 2024 / 31 April 2025
UPM Centre: CITSEM – Campus Sur	Hours per week: 10
Total hours: 135	Credits: 4,5
<b>Supervisor data:</b>	
Name: Prof. Rubén Fraile	
Department: Ingeniería Telemática y Electrónica	
E-mail: r.fraile@upm.es	Phone: 9106 73379
<b>Project contents and requisite skills</b>	
<p>The project consists in the programming of audio signal processing algorithms in Python. The candidates are expected to develop Python modules that implement diverse audio processing algorithms, and to compare processing results with those obtained using other platforms such as Matlab. The developed modules are to be shared via GitHub.</p> <p>Candidates are expected to be proficient in basic digital signal processing techniques (digital filters, DFT, etc.), to have experience in high-level programming, and to know the basic characteristics of audio signals.</p>	
<b>Expected learning outcomes</b>	
<ul style="list-style-type: none"><li>• Develop signal processing algorithms in Python.</li><li>• Use a version control and code sharing system.</li><li>• Analyze and critically evaluate numerical results.</li><li>• Write a technical/academic report.</li><li>• Perform an oral presentation of the work carried out.</li></ul>	

---

<sup>1</sup> Note that the starting date cannot be before the beginning of the lectures in the corresponding semester

<sup>2</sup> Note that the ending date cannot be after the last exam in the corresponding semester

### **Rules for students**

- a) To join the project, to follow the rules and schedule agreed with the supervisor, and to duly justify any possible absence.*
- b) To carry out the activities specified in the project schedule and to keep the necessary contact with the supervisor.*
- c) To inform to the Internship Coordinator at ETSIST, or to the Mobility Office, of any event or complaint that may arise in the development of the project.*
- d) To send to the Internship Coordinator at ETSIST an interim report (Annex II), a final report of the work carried out (Annex III) and the satisfaction questionnaire of the internships, according to the forms and the deadlines set in the annexes of this regulation.*
- e) To maintain the confidentiality of the internal information of ETSIST, Department or Center to which they have got access, as well as to not exploit the work carried out in the project without express authorization.*