SCIENCE COURSES FOR ENGINEERS

2EL0010 – Teaching assistant

Instructors: Mehdi Ayouz, Philippe Bouafia
Department: DÉPARTEMENT MATHÉMATIQUES
Language of instruction: FRANCAIS, ANGLAIS
Campus: CAMPUS DE PARIS - SACLAY
Workload (HEE): 60
On-site hours (HPE): 35,00
Elective Category : Business Sciences
Advanced level : Yes

Description

Teaching Assistant Physics: this course consists of tutoring and supporting first year students in their Quantum and Statistical Physics course. It is a great opportunity to learn about teaching for a potential teaching career or to apply for Teaching Assistant positions in famous North American universities. The objective is that you learn how to (i) pass on your knowledge and understanding to a non-expert audience, and (ii) accompany a student in his or her progress towards a validation of knowledge and understanding of the Quantum Mechanics course.

Teaching assistant Mathematics: this course consists of giving reinforcement and support to pre-selected 1st year students in their CIP-EDP Mathematics course. Introductory workshops on pedagogy complete this course. You will have an enriching personal experience helping your fellow first-year students and you will experience the cultural differences in mathematics teaching. In addition, you will be part of the teaching staff of the mathematics department for a period of time and will be able to have privileged exchanges with the teacher-researchers. Finally, you will be able to develop the acquisition of pedagogical and persuasive skills as a differentiating feature of your training. In particular, if you wish to do a double degree in an American or British university, you will be able to use this experience to obtain one or more teaching assistantships and be partially or totally exempt from tuition fees.

Quarter number

SG6 and SG8

Syllabus

Teaching Assistant for Physics: an introductory course will give the necessary elements for the construction of teaching objectives, the construction of qcms and the notions of scripting and pedagogical alignment. However, the majority of this course is do-it-yourself. You will

be paired with a group of about 15 first year students with potential difficulties as they come from non-classical backgrounds. There will be nine 1h30 sessions, each session focusing on a chapter of the Quantum and Statistical Mechanics course. For each session, a pair of students will carry out the "reinforcement" tutorials developed for this purpose. The pair will participate in upgrading the tutorials based on feedback from previous year by defining the pedagogical learning objectives. They will realize a qcm for testing these pedagogical objectives. The 1h30 session will be dedicated to the correction of reinforcement tutorials with their assigned group. They will be asked to focus on the points of difficulty encountered to help the progression of the 1st year students.
Teaching Assistant in Mathematics: a kick-off meeting will bring together the Teaching Assistants and the supervising teachers in order to present the year's activities, their objectives and their organisation. Pairs or triples of Teaching Assistants will supervise ten or so first-year students throughout the year and will have a referent teacher to guide them in this activity. Each Enhanced Modality session will be preceded by a briefing with the referring professor, the TAs will propose their plan for the session in a summary sheet, and a debriefing will take place after the session. Workshops planned throughout the year will allow you to learn about pedagogy.

Class components (lecture, labs, etc.)

Teaching Assistant in Physics: Introductory course and simulation (pair ensuring 9 classes of 1h30 with a total of 15 first year students, upgrade the existing tutorials, design of qcm).
Teaching Assistant in Mathematics: Pairs or trinomials of Teaching Assistants will supervise about ten first year students throughout the year and will have a referent teacher to guide them in this activity. Each Enhanced Modality session will be preceded by a briefing with the teacher, the TAs will propose their plan for the session in a summary sheet, and a debriefing will take place after the session.

Please note: it is not possible to be a Teaching Assistant in Physics AND Maths, but only in one or the other.

Grading

Teaching assistant in Physics: you will be assessed in pairs on your contribution to tutorials, qcm constructed and on the animation of a lesson.

Teaching assistant in Mathematics: you will be assessed on the pedagogical and scientific qualities of your lessons, and on the rigour and discipline in

the follow-up of the scheme (preparation of briefings, debriefs) and the follow-up of 1A students.

Learning outcomes covered on the course

Teaching Assistant Physics: at the end of this course, students will be able to (1) set up a grid of pedagogical objectives, (2) create a qcm type assessment adapted to the pedagogical learning objectives, and (3) script and lead a session in front of a class of about fifteen students, and use digital tools (in particular the teaching platform: http://prd-mecaqu.centralesupelec.fr/) allowing the student-user to carry out his own numerical experiments in order to better represent the core concepts of quantum mechanics. Pedagogical and supervisory skills and persuasive skills are also acquired skills targeted by this course (C5.1, C7.2, C7.3 and C7.4).

Teaching Assistant in Mathematics: Pedagogical, supervisory and persuasive skills (C5.1, C7.2, C7.3 and C7.4)