## Physics

*Questionnaire for academics*

| Specific Competences | **Importance for First Cycle** None Weak Considerable Strong 1 2 3 4 | **Importance for Second Cycle** None Weak Considerable Strong 1 2 3 4 |
|---|---|---|
| 42. Acquire additional qualifications for career, through optional units other than physics **(interdisciplinary attitude/abilities)** | ------ | ------ |
| 43. Acquire an understanding of the nature of physics research, of the ways it is carried out, and of how physics research is applicable to many fields other than physics, e.g. engineering; ability to design experimental and/or theoretical procedures for: (i) solving current problems in academic or industrial research; (ii) improving the existing results **(basic and applied research skills)** | ------ | ------ |
| 44. Be able to work in an interdisciplinary team; to present one's own research or literature search results to professional as well as to lay audiences **(specific communication skills)** | ------ | ------ |
| 45. Be able to carry out the following activities: professional activities in the frame of applied technologies, both at industrial and laboratory level, related in general to physics and, in particular, to radio-protection; tele-communication; tele-sensing; remote control with satellite; quality control; participating in the activities of the public and private research centres (including management); taking care of analysis and modelling issues and of the involved physics and computer aspects **(spectrum of accessible jobs)** | ------ | ------ |
| 46. Be able to carry out the following activities: promoting and developing scientific and technological innovation; planning and management of technologies related to physics, in sectors such as industry, environment, health, cultural heritage, public administration; banking; high level popularisation of scientific culture issues, with emphasis on theoretical, experimental and applied aspects of classical and modern physics. **(spectrum of accessible jobs)** | ------ | ------ |

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|---|---|---|
| 47. Be able to compare new experimental data with available models to check their validity and to suggest changes in order to improve the agreement of the models with the data **(modelling skills)** | ------ | ------ |
| 48. Be able to develop a personal sense of responsibility, given the free choice of elective/optional courses. Through the wide spectrum of scientific techniques offered in the curriculum, the student/graduate should be able to gain professional flexibility **(human/professional skills)** | ------ | ------ |
| 49. Be able to enter new fields through independent study (**learning to learn ability)** | ------ | ------ |
| 50. Be able to evaluate clearly the orders of magnitude, to develop a clear perception and insight of situations which are physically different, but which show analogies; hence allow the use of known solutions in new problems **(problem solving skills**) | ------ | ------ |
| 51. Be able to identify the essentials of a process / situation and to set up a working model of the same; the graduate should be able to perform the required approximations in order to reduce the problem at a manageable level; i.e. critical thinking to construct physical models **(modelling skills and problem solving skills**) | ------ | ------ |
| 52. Be able to perform calculations independently, even when a small PC or a large computer is needed; the graduate should be able to develop software programmes **(problem solving skills and computer skills**) | ------ | ------ |
| 53. Be able to search for and use physical and other technical literature, as well as any other sources of information relevant to research work and technical project development. Good knowledge of technical English is required **(literature search and use skills)** | ------ | ------ |
| 54. Be able to understand the socially related problems that confront the profession and to comprehend the ethical characteristics of research and of the professional activity in physics and its responsibility to protect public health and the environment (**general and specific ethical awareness**) | ------ | ------ |

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|---|---|---|
| 55. Be able to work with a high degree of autonomy, even accepting responsibilities in project planning and in the managing of structures (**managing skills**) | ------ | ------ |
| 56. Be prepared to compete for secondary school teaching positions in physics ( **spectrum of accessible jobs)** | ------ | ------ |
| 57. Enjoy facility to remain informed of new developments and methods and the ability to provide professional advice on their possible range of applications (**specific updating skills**) | ------ | ------ |
| 58. Have a deep knowledge of the foundations of modern physics, say quantum theory, etc. **(deep general culture in physics)** | ------ | ------ |
| 59. Have a good knowledge of the state of the art in —at least— one of the presently active physics specialities **(familiarity with frontier research)** | ------ | ------ |
| 60. Have a good understanding of the most important physical theories, with insight into their logical and mathematical structure, their experimental support and the physical phenomena that can be described with them **(theoretical understanding of physical phenomena)** | ------ | ------ |
| 61. Have become familiar with «*the work of genius*», i.e. with the variety and delight of physical discoveries and theories, thus developing an awareness of the highest standards (**sensitivity to absolute standards**) | ------ | ------ |
| 62. Have become familiar with areas of physics most important not only through their intrinsic significance, but because of their expected future relevance for physics and its applications; familiarity with approaches that span many areas in physics **(general culture in physics)** | ------ | ------ |
| 63. Have become familiar with most important experimental methods; moreover be able to perform experiments independently, as well as to describe, analyse and critically evaluate experimental data (**experimental and lab skills)** | ------ | ------ |

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|---|---|---|
| 64. Have improved command of foreign languages through participation in courses taught in foreign language: i.e. study abroad via exchange programmes, and recognition of credits at foreign universities or research centres (**general and specific foreign language skills**) | ------ | ------ |
| 65. Understand and master the use of the most commonly used mathematical and numerical methods **(problem solving skills and mathematical skills)** | ------ | ------ |
| 66. Other (specify) | ------ | ------ |
| 67. Other (specify) | ------ | ------ |
| 68. Other (specify) | ------ | ------ |