

Particle Physics Role Play Games in introductory physics courses.

An 18-hours course taught in role-play and distance learning modes is presented. The course was designed in order to experiment with innovative methods to engage students in active learning, to foster their identification in what is being studied and to boost their motivation in the study of introductory physics courses at Politecnico of Torino. Students are immersed in different settings and are asked to play the role of a physicist. As they go on in the adventure and overcome challenges, they gain competences (represented by experience points) and advance in capability. This advancement is expressed in terms of an increase in their level.

The settings of the Role Play Game belong to the world of particle physics: from the neutrino hypothesis (1930s) to the study of collisions between pions and Helium nuclei (2000s). Students are exposed to experimental data (both simulated and from real accelerator experiments) and are asked to apply what they learned in the Physics I course. The pivotal concept around which the entire course revolves is that of conservation laws (Energy and momentum).

Students are organised into groups in order to stimulate teamwork and the use of soft skills. When a new concept or an in-depth study is required as a new tool to succeed in the game, students are invited to develop it independently through a problem-solving activity designed by the instructor.

Working group

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Session Classification: Special session