

# Professors responding to the new challenges on engineering profession: bringing new values into the classroom

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## ABSTRACT

Education in values is seen as a continuous process that begins at the childhood. It is unquestionably influenced by the family and the society. University should consolidate the formation of the political, ethical and moral values acquired in the former educational levels, as well as to form and to develop the professional values (Lourdes Zumalacárregui and Alonso, 2002).

Formation of values is not an additional content in the curriculum, but a *reality* that should be considered in the whole work system and activities at the university through all the dimensions of the educational process. In the engineer education, values are and always have been present. Yet these values not always have been adapted to the reality of the society in which engineers develop their professional careers and lives.

The last decade has seen a remarkable change in the economic and social landscape of society. Many societal trends and needs call for engineers to broaden their outlooks, have more flexible career options, and work closely and effectively with persons of quite different backgrounds. Yet the education and general orientation of engineers have been directed inward toward the profession, rather than outward toward the rest of society and the world (King, 2006), and in some classrooms there are transmitted values that were for the first or the second industrial revolution.

The convergence of the Spanish tertiary education system into the European Higher Education Area (EHEA) represents an opportunity to introduce new educational methodologies that could facilitate the development of the knowledge, attitudes and procedures that are needed to the new professional and personal contexts.

Some teachers at the Technical University of Catalonia (UPC) are developing a project of educational innovation in which they aim to incorporate the following issues transversally into the technical subjects that they give nowadays: values and ethics in engineering, participative learning, transdisciplinarity, multiculturalism and diversity, and human sustainable development. This paper draws on this experience and it treats the opportunities and difficulties which teachers face bringing new values into the classroom.

**Keywords:** engineering education, competences, ethics, new teaching methods

## References

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