
An alternative approach in mechatronics curricular development at AFEKA – Tel-Aviv Academic College of Engineering and at Tel-Aviv University

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Abstract The AFEKA – Tel Aviv Academic College of Engineering has developed a program in mechatronics studies designed not just for students of mechanical engineering but for every student in any field of engineering, as well as for experimentalists in natural sciences. This program supplies the students with tools that allow them to gain interdisciplinary insights and to carry out interdisciplinary final projects. In this paper we outline this program and give a detailed description of some unique features of the mechatronics laboratory.

Keywords mechatronics; laboratory; interdisciplinary

Introduction

In an interdisciplinary world, the term ‘mechatronics’ is no longer a futuristic term but rather a contemporary one (as with bioengineering, robotics or nanotechnology). As such, many engineering departments have developed impressive curricula in mechatronics as part of their programs in mechanical engineering [1–3]. Some departments even offer a BSc degree in mechatronics [1]. At AFEKA – Tel-Aviv Academic College of Engineering, we feel that if mechatronics is to be a truly interdisciplinary field of study, then it should not be restricted to students of mechanical engineering, but be offered to every student in each of the three departments of our school: mechanical engineering (ME), electrical engineering (EE) and software engineering (SE). Since the academic year 2000–01, we have been offering two courses in mechatronics *designed for all three departments*. Both courses are obligatory for each ME student. For students in either of the other departments, both are elective. Students who attend these courses acquire experience in carrying out interdisciplinary projects, which they value. Consequently, there is a growing number of final projects for the BSc degree which are interdisciplinary.

In this paper, we describe the key features of our mechatronics courses that make them relevant to many disciplines in engineering, as well as for students in chemistry and physics; these courses have been taught in parallel at the School of Chemistry in Tel-Aviv University (TAU).