

# LEARNING OUTCOMES IN CONSTRUCTION MANAGEMENT FIELD AT CIVIL ENGINEERING STUDIES AT FACULTY OF CIVIL ENGINEERING IN RIJEKA

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*The study reform based on the Bologna declaration gave the Faculty of Civil Engineering in Rijeka the opportunity to reconsider what has been done in this particular civil engineering field at the traditional studies and to define learning outcomes for the new studies. When defining the learning outcomes in the field of construction management the type and complexity of tasks which the student will have to deal with after having completed different levels of study programmes must be taken into consideration. This paper briefly describes the history of teaching construction management at the Faculty of Civil Engineering in Rijeka. The learning outcomes in the field of construction management at actual studies, the university undergraduate and graduate study programme, are presented and analyzed in more detail.*

**KEYWORDS:** study reform, learning outcomes, construction management

## INTRODUCTION

Croatia has signed the Bologna declaration in 2001. The study reform of the year 2005, including the development of a quality assurance system, and start of delivering the reformed studies that ended in 2006 are recognised as the first two phases of the Bologna process. The third phase, implementation of the learning outcomes concept, is probably the most complex part of the reform because it necessarily addresses the traditional principles in Croatian higher education.

Civil Engineering university studies at all Croatian Civil Engineering faculties are now organised in the same way:

- undergraduate study in CE: duration 3 years, minimum 180 ECTS
- graduate study in CE, duration 2 years, minimum 120 ECTS
- postgraduate (specialist or doctoral) study in CE: duration 1-3 years, 60-180 ECTS

The learning outcomes at a study level are defined by answering a few very simple questions: What will the students know, understand or be able to do upon completion of a certain level of study? Which competencies will the student develop? Which personal (usually called generic) competencies will the student develop?

The goal of this paper is to encourage discussion about the intended learning outcomes in the field of Construction Management by presenting an example of the defined learning outcomes in this field at the university programmes in Civil

Engineering at the Faculty of Civil Engineering in Rijeka.

## Teaching Construction Management at Faculty of Civil Engineering in Rijeka

### University Undergraduate Civil Engineering Studies

When teaching construction organization and technology at the university undergraduate studies at the Faculty of Civil Engineering in Rijeka up to 2004/05 is discussed, a number of problems which have not been resolved throughout years must be pointed out. There was no separate unit for construction organization and technology at the time. The teaching staff structurally belonged to Transportation Engineering Department which rendered impossible clear articulation of problems and development plans of the field in question for a number of years.

### University Undergraduate and Graduate Civil Engineering Studies (from 2005/06)

The very year 2005 brought significant positive changes in organization and technology field development at the Faculty through founding the Sub-department of Construction Organization and Technology and Architecture, that is, through curriculum changes of those courses according to Bologna declaration principles.

In addition to giving the Construction Organization and Technology course the mandatory subject status at the university graduate studies, the implementation teaching programs have been modernized and adjusted to those being taught at

other faculties of civil engineering in Croatia. Moreover, new courses have been introduced (Project Management, Construction Management, Investment Policy, Construction Maintenance, Fieldwork).

### **Learning outcomes at Civil Engineering studies**

#### **Learning outcomes – in general and at the Civil Engineering studies**

Learning outcome can be defined as a specification of what a typical learner will have achieved at the end of the programme or part of the programme or course.

The learning outcomes on the course level can be defined through the following four steps: (1) Definition of course goals; (2) Definition of the learning outcomes the basis of the defined goals; (3) Definition of the assessment methods and (4) Definition of the teaching methods appropriate for the learning outcomes intended.

There are a number of very advanced international associations that deal with improvement of engineering and/or civil engineering education, e. g. EUCEET. The academics and employers were asked to estimate the relevance of the given learning outcomes for the different levels of the Civil Engineering studies (EUCEET, 2009) (e. g. a subject – related competence is the ability to apply knowledge of mathematics and other basic subjects while the ability to work in an interdisciplinary team is a generic competence).

#### **Learning outcomes in the field of construction management at university studies of Faculty of Civil Engineering in Rijeka**

Implementation of learning outcomes, at programme and course level, at the Faculty of Civil Engineering in Rijeka is part of the activities that follow the Strategy of the University of Rijeka (2007.-2013.) (University of Rijeka, 2007) concentrated in the goal “Curriculum reform based on the learning outcomes” Also, at the Faculty is going on project, financed by the National foundation for science, higher education and technological development of the Republic of Croatia, “Learning outcomes in higher education of civil engineers”. When teaching courses of this field of study, it is recommendable to encourage discussion about technical problems, team work for solving program tasks, writing and presentation of student’s seminar papers and workshops along with the classical presentation methods. With regard to nature of the profession, organizing field visits or

prolonged construction site stays as part of the Field Work and Professional Training course, as well as assigning of tasks related to a specific construction site problem which the students must resolve in writing by applying specific IT tools and orally discuss with the teacher is of outmost importance. The evaluation methods all come down to evaluating the learning outcomes of courses. Assessment of active participation and discussion in class as well as test exercises for different teaching units which can be evaluated just for some, not for all the students are quite advisable.

### **CONCLUSION**

Definition of specific and generic competences for different study levels, fields and courses is currently in process at the Faculty of Civil Engineering in Rijeka. In defining learning outcomes for the construction management field specific subject competences for different study levels and necessity to prepare students for their future careers were taken into consideration.

It is important to provide proper information to all stakeholders about competences which the students acquire at civil engineering studies as well as to monitor the relevance of intended learning outcomes in permanent contact with employers and former students.

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