

ITU, Environmental Engineering Undergraduate Program  
2011-2012 Fall Semester

# **ASSESSMENT REPORT**

for

## **OUTCOME11**

***“AN ABILITY TO USE THE TECHNIQUES, SKILLS, AND MODERN ENGINEERING  
TOOLS NECESSARY FOR ENVIRONMENTAL ENGINEERING PRACTICES”***

### ***Assigned LECTURES***

CEV411 Wastewater Treatment  
CEV441 Environmental Modeling Principles  
CEV492 Graduation Design Project

### ***Overall Evaluators***

Assist Prof Ebru DÜLEKGÜRGEN  
Res Assist Edip AVŞAR

April 2012

## SYNOPSIS

ITU Undergraduate Program / Fall 2011-2012

**Overall RUBRIC Results for OUTCOME 11 (Level 3): Individual CLASS performances FROM 3 Assigned Courses**

Table 3

	<i>NOT APPLICABLE</i>	<i>Table 3</i>	<i>NOT AVAILABLE</i>	<i>(based only on CEV441)</i>
	<i>CEV411</i>	<i>CEV441</i>	<i>CEV496</i>	<i>OVERALL</i>
<i>PERFORMANCE LEVELS</i>	<i>CLASS PERFORMANCE</i>	<i>CLASS PERFORMANCE</i>	<i>CLASS PERFORMANCE</i>	<i>CLASS PERFORMANCE</i>
<i>OUTSTANDING</i>		<b>9%</b>		<b>9%</b>
<i>SATISFACTORY</i>		<b>82%</b>		<b>82%</b>
<i>DEVELOPING</i>		<b>9%</b>		<b>9%</b>
<i>UNSATISFACTORY</i>		<b>0%</b>		<b>0%</b>
<i>OUTSTANDING</i>	x/80	5/55	?	5/55
<i>SATISFACTORY</i>	x/80	45/55	?	45/55
<i>DEVELOPING</i>	x/80	5/55	?	5/55
<i>UNSATISFACTORY</i>	x/80	0/55	?	0/55

<b>OUTCOME11</b>	<b>RUBRIC Applications / ASSESSMENT</b>
------------------	---

**CONTENTS**

	<i>Page No</i>
<b>1. OUTCOME NUMBER and CONTENT:.....</b>	<b>3</b>
<b>2. OUTCOME OVERALL EVALUATORS</b>	<b>3</b>
<b>3. ASSIGNED COURSES (for Fall 2011-2012)</b>	<b>3</b>
<b>4. RUBRIC for OUTCOME11 (ITU EED)</b>	<b>3-4</b>
<b>5. ASSESSMENTS / SUGGESTIONS for IMPROVEMENT</b>	<b>5-6</b>
a) <i>CEV411 Wastewater Treatment</i>	5
b) <i>CEV441 Environmental Modeling Principles</i>	5-6
c) <i>CEV492 Graduation Design Project</i>	6
<b>6. SUMMARY of EVALUATION RESULTS</b>	<b>6</b>
<b>APPENDIX-ORIGINAL ASSESSMENT REPORTS from the assigned courses</b>	<b>7-</b>

**LIST of TABLES**

<b>Table 1.</b> Table 1. Rubric for Outcome 11 (ITU EED).....	<b>4</b>
<b>Table 2.</b> Partial assessment for PC-5 of Outcome11 by the 2 sessions of CEV411.....	<b>4</b>
<b>Table 3.</b> Rubric-based assessment for realization of Outcome11 by the 2 sessions of CEV441.....	<b>6</b>

<b>OUTCOME11</b>	<b>RUBRIC Applications / ASSESSMENT</b>
------------------	---

**1. OUTCOME NUMBER and CONTENT**

**RELATION OF THE COURSE CONTENT IN ACHIEVING PROGRAM OUTCOMES**

**Contribution Level: 3**

**OUTCOME 11**

**An ability to use the techniques, skills, and modern engineering tools necessary for environmental engineering practices**

**2. OUTCOME OVERALL EVALUATORS**

Assist. Prof. Ebru DÜLEKGÜRGEN

Res. Assist. Edip AVŞAR

**3. ASSIGNED COURSES (for Fall 2011-2012)**

CEV411 Wastewater Treatment

CEV441 Environmental Modeling Principles

CEV492 Graduation Design Project

**4. RUBRIC for OUTCOME11 (ITU EED)**

See Table 1 for the rubric for assessment of realization of Outcome11.

<b>OUTCOME11</b>	<b>RUBRIC Applications / ASSESSMENT</b>
------------------	---

**Table 1.** Rubric for Outcome 11 (ITU EED)

<b>OUTCOME-11 An ability to use the techniques, skills, and modern engineering tools necessary for environmental engineering practices</b>				
<b>Performance Criteria [weigh]</b>	<b>Unsatisfactory 1 point</b>	<b>Developing 2 points</b>	<b>Satisfactory 3 points</b>	<b>Outstanding 4 points</b>
Finding needed information/outside resources [1]	Often does not even use the course textbook to help solve problems or homework	Looks only to class resources in solving problems and homework	Seeks information on problems from limited resources	Seeks information on problems from multiple resources
Interpreting needed information/outside resources [2]	Is not willing to use outside resources unless required	Requires assistance in interpretation of information from a small number of outside resources	Is able to interpret and understand information from limited number of outside resources	Is able to interpret and understand information from a variety of resources
Selecting/using tools [2]	Is not able to identify and/or use the right tools for a particular problem or project	Needs some guidance in selecting and/or using appropriate tools for a particular problem or project	Can usually identify and/or use tools that might fit a particular problem or project	Can identify and/or use appropriate tools effectively in assignments or projects
Computer skills [1]	Struggles with simple tasks in PC use and/or is unable to use current software packages	Can perform simple tasks requiring PC use and /or use of current software packages	Can perform necessary tasks requiring PC use and /or use of current software packages	Maintains current, state-of-the-art abilities in PC use and use of current software package
Using specialized engineering tools, such as simulations, graphical techniques, etc. [2]	Uses in assignments or classroom work when guided by the instructor	Uses in assignments or classroom work without help of the instructor	Uses in design projects where the professor chooses, restricts, or helps in the selection of the tools. Students analyze and validate the results.	Uses in design projects where students make an appropriate choice of the tool. Students analyze and validate the results.
Using other modern tools and instruments for Environ Engineering applications [1]	Can not use other modern tools and instruments for Environmental Engineering	Poor or improper use of other modern tools and instruments for Environmental Engineering	Satisfactory use of other modern tools and instruments for Environmental Engineering	Extensive use of other modern tools and instruments for Environmental Engineering
Using library resources [1]	Does not use the library	Requires assistance in locating materials from the library	Understand the use of the library	Understand the organization and use of the library
<b>OVERALL PERFORMANCE</b>	<b>Unsatisfactory</b>	<b>Developing</b>	<b>Satisfactory</b>	<b>Outstanding</b>
<b>POINTS REQUIRED</b>	<b>0-10</b>	<b>11-20</b>	<b>21-30</b>	<b>31-40</b>

OUTCOME11	RUBRIC Applications / ASSESSMENT
-----------	----------------------------------

## 5. ASSESSMENTS / SUGGESTIONS for IMPROVEMENT

### a) CEV411 Wastewater Treatment

This 7<sup>th</sup> semester course is one of the courses of the ITU Environmental Engineering Undergraduate Program assigned for overall assessment of realization of Outcome11 at a contribution level of 3 for Fall 2011-2012.

This course has 2 sessions in Turkish: one with 49 students and given by Prof İzzet ÖZTÜRK and Assoc. Prof H. Güçlü İNSEL (Session-1) and the other with 31 students and given by Prof. İsmail KOYUNCU and Assist Prof Mahmut ALTINBAŞ (Session-2).

According to the original assessment documents prepared by those instructors and submitted to the evaluation team, the **rubric for Outcome11** seen in Table 1 was **not applied** for assessment of realization of outcome11 at a level of 3 (see original documents in Appendix). Instead, **assessment** of students' performances was **limited to** grading their abilities/performances in 5 different **drawing assignments** within the scope of the project assignment run throughout the semester. This assessment is **related only to the 5<sup>th</sup> performance criterion (PC) of the rubric** for Outcome 11 (Table 1): **"using specialized engineering tools, such as simulations, graphical techniques, etc."**

Details of those partial assessments can be found in the Appendix. According to those original assignments based only on drawing skills of the students and related only to the 5<sup>th</sup> PC of the rubric the performance summaries for the 2 sessions are as follows:

**Table 2.** Partial assessment for PC-5 of Outcome11 by the 2 sessions of CEV411

PERFORMANCE LEVELS	Session-1		Session-2		CEV411 All Sessions	
	Number of students	CLASS PERFORMANCE	Number of students	CLASS PERFORMANCE	Number of students	CLASS PERFORMANCE
OUTSTANDING	0/49	0%	0/31	0%	0/80	0%
SATISFACTORY	31/49	63%	21/31	68%	52/80	65%
DEVELOPING	18/49	37%	10/31	32%	28/80	35%
UNSATISFACTORY	0/49	0%	0/31	0%	0/80	0%

### **Suggestion for Improvement:**

For the next semester, it is recommended by the evaluation team that the **entire rubric be applied** with evaluation of the **all 7 performance criteria** for a more comprehensive assessment of realization of Outcome11 by this course.

### b) CEV441 Environmental Modeling Principles

This 7<sup>th</sup> semester course is one of the courses of the ITU Environmental Engineering Undergraduate Program assigned for overall assessment of realization of Outcome11 at a contribution level of 3 for Fall 2011-2012.

This course has 2 sessions: one in Turkish with 25 students and the other in English with 30 students. The assessment reports for those sessions were submitted to the evaluator team by Assist Prof Ali ERTÜRK.

According to the original assessment documents prepared by those instructors and submitted to the evaluator team, the **rubric for Outcome11** seen in Table 1 was **applied** for assessment of realization of Outcome11 at a level of 3 (see original documents in Appendix). The **assessment tool** was a **"team-work"** assignment where the students were expected to **use a water quality modeling software** (developed by one of the instructors of the course) that is claimed to have

<b>OUTCOME11</b>	<b>RUBRIC Applications / ASSESSMENT</b>
------------------	---

similar capabilities and limitations to a real-world environmental modeling on a PC and to **seek information** on how to run the model and **interpret the results**, together with preparation of a **report** and making an **oral presentation**. Summary of the results of this assessment is given in Table 3.

**Table 3.** Rubric-based assessment for realization of Outcome11 by the 2 sessions of CEV441

	Session-1		Session-2		CEV441 All Sessions	
PERFORMANCE LEVELS	Number of students	CLASS PERFORMANCE	Number of students	CLASS PERFORMANCE	Number of students	CLASS PERFORMANCE
OUTSTANDING	5/25	20%	0/30	0%	5/55	9%
SATISFACTORY	20/25	80%	25/30	83%	45/55	82%
DEVELOPING	0/25	0%	5/30	17%	5/55	9%
UNSATISFACTORY	0/25	0%	0/30	0%	0/55	0%

**Suggestion for Improvement:**

The evaluator team recommends that the assessment continues as is for the next semester.

**c) CEV492 Graduation Design Project**

This 7<sup>th</sup> semester course is one of the courses of the ITU Environmental Engineering Undergraduate Program assigned for overall assessment of realization of Outcome11 at a contribution level of 3 for Fall 2011-2012.

This course has several sessions (team works, coordinated by various instructors), all in Turkish.

According to the original assessment report prepared by the instructors and submitted to the evaluation team, the **rubric for Outcome11** seen in Table 1 was **not applied** for assessment of realization of Outcome11 at a level of 3 (see original documents in Appendix). At the original assessment report, it was stated by the instructors that computer aided design was used as a modern engineering tool for drawing assignments of the graduation design project and the rubric did not have a separate criterion for assessing the quality of the drawings, hence it was not possible to assess the realization of Outcome11 for Fall 2011-2012 by this course. The instructors also stated that the rubric would be revised for the next semester to assess the skills of the students to use computer aided design.

**Suggestion for Improvement:**

For the next semester, it is suggested by the evaluation team that it might be a **starting point to apply the current rubric** with evaluation of **all 7 performance criteria** for a assessment of realization of Outcome11 by this course.

**Note:** in due course of preparation of this assessment report, the evaluator team asked the instructors of this course (via e-mail) about their ideas/suggestions for improving the rubric for Outcome11. No improvement suggestion has arrived to the evaluator team regarding this issue as of the due date of this report (15.04.12), yet it was stated via e-mail that preparation of a new rubric or revision of the current rubric will be carried out throughout the Spring Semester of 2011-2012 all together by the instructors of this course and will be applied by the end of that semester.

**6. SUMMARY of EVALUATION RESULTS**

Please see “**Synopsis**” for the summary.

**OUTCOME11**

**RUBRIC Applications / ASSESSMENT**

## **APPENDIX**

# **ORIGINAL ASSESSMENT REPORTS**

**from the assigned courses**