<table>
<thead>
<tr>
<th><strong>Course Title</strong></th>
<th>Environmental Risk Assessment</th>
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<tbody>
<tr>
<td><strong>Course Unit Code</strong></td>
<td>CEE 581</td>
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<tr>
<td><strong>Type of Course Unit</strong></td>
<td>Optional</td>
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<tr>
<td><strong>Level of Course Unit</strong></td>
<td>2\textsuperscript{nd} and 3\textsuperscript{rd} cycle</td>
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<tr>
<td><strong>Year of Study</strong></td>
<td>Graduate studies</td>
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<tr>
<td><strong>Semester when the Course Unit is Delivered</strong></td>
<td>Fall</td>
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<tr>
<td><strong>Number of ECTS Credits Allocated</strong></td>
<td>8.0</td>
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<tr>
<td><strong>Name of Lecturer(s)</strong></td>
<td>D. Fatta-Kassinos</td>
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### Learning Outcomes of the Course Unit

Students should be able to:

1. Develop a general environmental risk assessment procedure
2. Formulate the general steps involved in the risk assessment process
3. Determine the important physicochemical and biological processes that affect the risk associated with chemicals
4. Calculate concentrations and loads of pollutants
5. Calculate mass and energy outputs from systems through balances and thermochemical reactions and equations
6. Understand the various mechanisms that might govern the fate of pollutants in environmental media
7. Appreciate the limitations and uncertainties associated with environmental risk assessment.

### Prerequisites

N/A

### Co-requisites

N/A
### Course Contents

Introduction to risk assessment, definitions, methodology (problem formulation, hazard identification, exposure assessment, exposure-response assessment, risk characterization), basic knowledge in chemistry and biology, fate of pollutants in environmental media, mass and energy balances, toxic organic compounds, heavy metals, physicochemical properties, sorption, adsorption, evaporation, hydrolysis, photochemical transformations, biological transformations, biocentration, bioaccumulation, uncertainties in risk assessment, case studies.

The course covers topics relating to characterizing source areas, linking fate and transport mechanisms, evaluating exposure pathways and applying toxicology data to evaluate environmental risk in a variety of differing contexts. The methods presented are applicable to all types of environmental restoration and protection engineering problems. The focus is primarily on human health risk related to chemical release scenarios.

### Required Reading

Notes and written material prepared by the lecturer are provided to the students.

### Recommended Reading


### Planned Learning Activities

Exercises solving, Final Assignment, Oral presentation

### Teaching Methods

Lectures (3 hours/week)

### Assessment Methods and Criteria

Final exam, Midterm exam, Final Assignment, Oral presentation of the assignment

### Language of Instruction

Greek

### Work Placement(s)

N/A