| Module Title | Soil-structure interaction – 5 ECTS  
*Structural & Geotechnical* | Module ID: S6 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester</td>
<td>Second Semester: Weeks 1 to 10</td>
<td></td>
</tr>
</tbody>
</table>
| Module Leader | Assoc. Prof. Trevor Orr  
torr@tcd.ie |
| Other Staff | Prof Mark Dyer and Assoc. Prof. Brendan O’Kelly |
| Availability | Each year. Optional course |
| Objectives | To provide an understanding of the relevance and significance of soil-structure interaction in the case of different types of structures, including embedded and buried structures and how to take soil-structure interaction into account in design. |
| Outcomes | On successful completion of this module, the students will be able to:  
1. Identify situations where soil-structure interaction is likely to occur and assess its impact on the behaviour of a structure  
2. Assess the effects of differential settlement on the behaviour of a structure  
3. Predict the settlements of a structure due to tunnelling  
4. Determine the effect of structural stiffness and rigidity on the loads carried by foundations and earth pressures acting on retaining structures |
| Outline Syllabus | This module will examine the following topics:  
- What constitutes soil-structure interaction  
- The effects of soil-structure interaction  
- Allowable buildings movements and damage criteria  
- Hambly’s paradox  
- Beams on elastic foundations  
- Earth pressures on retaining walls  
- Pile foundations and pile groups  
- Ground movements due to tunnelling  
- Tunnel behaviour and buried pipes  
- Other examples of soil-structure interaction – e.g. soil reinforcement. |
| Reading References | Extra reading may be recommended by individual lecturers |
| Timetable | 27 hours of lectures: 19 lectures by Assoc. Prof. Orr, 4 lectures by Prof. M. Dyer and 4 lectures by Assoc. Prof. B. O’Kelly |