

4.00 credits

20.0 h + 15.0 h

Q2

Teacher(s)	Spinewine Benoît ;
Language :	English > French-friendly
Place of the course	Louvain-la-Neuve
Prerequisites	Basic concepts of soil classification, effective stress, compressibility, shear strength, laboratory and site investigation, design of shallow and deep foundations. The concepts are e.g. taught in LGCIV1031, LGCIV1072 and LGCIV2071.
Main themes	<p>The objective of the course is to provide an introduction to current geotechnical engineering practice in offshore conditions. Over the last decades, offshore geotechnical engineering has grown up as an independent branch of geotechnical engineering due to significant differences in the scale of foundation elements dealt with but also due to the challenging soil behaviour characterization.</p> <p>The course will cover site geotechnical and geophysical exploration techniques, soil characterization, and basic design approaches for a number of foundation elements often used in offshore structures, such as suction caissons, piles, anchors and spudcans, as well as elements of pipeline geotechnics.</p>
Learning outcomes	<p><b>At the end of this learning unit, the student is able to :</b></p> <p><b>Contribution of the course to the program objectives (N°)</b> AA1.1, AA1.2, AA2.1, AA2.3, AA2.5, AA3.1, AA6.1</p> <p><b>Specific learning outcomes of the course</b></p> <p>At the end of the course, the student will be able to:</p> <p>1</p> <ul style="list-style-type: none"> <li>• Describe the current techniques of offshore geotechnical and geophysical site investigation and their fields of application.</li> <li>• Describe the nature of marine soils, their geological context, their behaviour, and identify potential issues.</li> <li>• Identify the most significant parameters that affect the performance of offshore foundation elements.</li> <li>• Determine the capacity of foundation elements and anchors.</li> <li>• Determine the pipeline/soil interaction parameters</li> </ul>
Evaluation methods	Will be given during the first course.
Content	<p>The course will cover the following subjects:</p> <ul style="list-style-type: none"> <li>• Introduction to offshore structures and industry (oil &amp; gas, renewable)</li> <li>• Offshore geotechnical and geophysical survey methods</li> <li>• Specific behaviour (calcareous sand, cemented soil, cyclic loading)</li> <li>• Offshore foundation types and their relevance.</li> <li>• Installation and bearing capacity of suction caissons, gravity base or shallow foundations, anchors, spudcans, piles</li> <li>• Elements of pipeline geotechnics</li> <li>• Elements of pipeline/cable trenching and protection methods</li> </ul>
Inline resources	Available on Moodle.
Bibliography	Randolph and Gourvenec. Offshore Geotechnical Engineering.
Faculty or entity in charge	GC

<b>Programmes containing this learning unit (UE)</b>				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Civil Engineering	GCE2M	4		