


5.00 crédits	40.0 h + 7.5 h	Q1
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Enseignants	Bartosiewicz Yann ;
Langue d'enseignement	Anglais
Lieu du cours	Louvain-la-Neuve
Acquis d'apprentissage	
Modes d'évaluation des acquis des étudiants	<p>The evaluation is a combination of continuous and in-session exam.</p> <p>The continuous part is a project (team of 2) where the students have to set up a simulation tools to calculate the pressure drop (plus temperature, quality profiles) in a boiling channel under different conditions. The exam is written (in english), and assess both theoretical and practical leaning outcomes. Thus this exam is split according a theoretical part (closed book) and a practical part (opened book)</p> <p>The final mark is calculated as:</p> <ul style="list-style-type: none"> <li>• Project + pratical part of the exam (11/20)</li> <li>• Exam (theoetical part) (9/20)</li> </ul>
Méthodes d'enseignement	<ul style="list-style-type: none"> <li>• 30h of ex catedra lectures</li> <li>• 30h of partially-supervised personnal work (project)</li> <li>• 16h of supervised exercice sessions (exercice sessions)</li> </ul> <p>The course takes place at the Nuclear Research Centre of Belgium (SCK.CEN) in gthe framework of the BNEN interuniversity programme (see: <a href="http://bnen.sckcen.be">http://bnen.sckcen.be</a>).</p> <p>Courses taking place at SCK.CEN are condensed over a period of 2 intensive weeks of courses.</p>
Contenu	<ul style="list-style-type: none"> <li>• Lect. 1: Thermal design principles</li> <li>• Lect. 2: Reactor energy distribution</li> <li>• Lect. 3: Transport eqns. For 1-phase flow: Reminders/summary</li> <li>• Lect. 4: Tranport eqns. For 2-phase flows:basic formulation</li> <li>• Lect. 5: Tranport eqns. For 2-phase flows:equations</li> <li>• Lect. 6: Thermodynamics, cycles: non-flow and steady flow</li> <li>• Lect. 7: Thermodynamics, cycles: non steady flow first law</li> <li>• Lect. 8: Thermal analysis of fuel elements</li> <li>• Lect. 9: 1-phase fluid mechanics/heat transfer: Reminders/summary</li> <li>• Lect. 10: 2-phase fluid mechanics/pressure drops</li> <li>• Lect. 11: 2-phase fluid mechanics/pressure drops</li> <li>• Lect. 12: 2-phase heat transfer (pool boiling)</li> <li>• Lect. 13: 2-phase heat transfer (flow boiling)</li> <li>• Lect. 14: Single-heated channel: steady state analysis</li> </ul>
Ressources en ligne	<a href="http://bnen.sckcen.be">http://bnen.sckcen.be</a>
Bibliographie	<ul style="list-style-type: none"> <li>• Todreas, N.E. and Kazimi, M.S. Nuclear System I: Thermal Hydraulic Fundamentals, CRC Press, 2012.</li> <li>• Todreas, N. E. and Kazimi, M.S. Nuclear Systems II: Elements of Thermal Hydraulic Design, Hemisphere Publishing Corp., New York, 1990.</li> </ul> <p><b>REFERENCE BOOKS ON THE CONTENT</b></p> <ul style="list-style-type: none"> <li>• Todreas, N.E. and Kazimi, M.S. Nuclear System I: Thermal Hydraulic Fundamentals, CRC Press, 2012. Mandatory.</li> <li>• Todreas, N. E. and Kazimi, M.S. Nuclear Systems II: Elements of Thermal Hydraulic Design, Hemisphere Publishing Corp., New York, 1990. Advised.</li> </ul>
Faculté ou entité en charge:	MECA

<b>Programmes / formations proposant cette unité d'enseignement (UE)</b>				
Intitulé du programme	Sigle	Crédits	Prérequis	Acquis d'apprentissage
Master [120] : ingénieur civil mécanicien	MECA2M	5		
Master [120] : ingénieur civil électromécanicien	ELME2M	5		