


5.00 crédits	40.0 h + 7.5 h	Q1
--------------	----------------	----

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"> • Project + pratical part of the exam (11/20) • Exam (9/20)
Méthodes d'enseignement	<ul style="list-style-type: none"> • 30h of ex catedra lectures • 30h of partially-supervised personnal work (project) • 16h of supervised exercice sessions (exercice sessions) <p>The course takes place at the Nuclear Research Centre of Belgium (SCK.CEN) in gthe framework of the BNEN interuniversity programme (see: http://bnen.sckcen.be).</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"> • Lect. 1: Thermal design principles • Lect. 2: Reactor energy distribution • Lect. 3: Transport eqns. For 1-phase flow: Reminders/summary • Lect. 4: Tranport eqns. For 2-phase flows:basic formulation • Lect. 5: Tranport eqns. For 2-phase flows:equations • Lect. 6: Thermodynamics, cycles: non-flow and steady flow • Lect. 7: Thermodynamics, cycles: non steady flow first law • Lect. 8: Thermal analysis of fuel elements • Lect. 9: 1-phase fluid mechanics/heat transfer: Reminders/summary • Lect. 10: 2-phase fluid mechanics/pressure drops • Lect. 11: 2-phase fluid mechanics/pressure drops • Lect. 12: 2-phase heat transfer (pool boiling) • Lect. 13: 2-phase heat transfer (flow boiling) • Lect. 14: Single-heated channel: steady state analysis
Ressources en ligne	http://bnen.sckcen.be
Bibliographie	<ul style="list-style-type: none"> • Todreas, N.E. and Kazimi, M.S. Nuclear System I: Thermal Hydraulic Fundamentals, CRC Press, 2012. • Todreas, N. E. and Kazimi, M.S. Nuclear Systems II: Elements of Thermal Hydraulic Design, Hemisphere Publishing Corp., New York, 1990. <p>REFERENCE BOOKS ON THE CONTENT</p> <ul style="list-style-type: none"> • Todreas, N.E. and Kazimi, M.S. Nuclear System I: Thermal Hydraulic Fundamentals, CRC Press, 2012. Mandatory. • Todreas, N. E. and Kazimi, M.S. Nuclear Systems II: Elements of Thermal Hydraulic Design, Hemisphere Publishing Corp., New York, 1990. Advised.
Faculté ou entité en charge:	MECA

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