HIGHER EDUCATION INTERNATIONALIZATION - DEVELOPMENT OF NEW PARTNERSHIP MODELS

TEXAS A&M ENGINEERING X ARTS ET MÉTIERS
AM2 – VIRTUAL TO IN PERSON

Workshop 2

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I. General information about COIL

Collaborative Online International Learning (COIL) connects students and professors in different countries for collaborative projects and discussions as part of their coursework. COIL Collaborations between students and professors provide meaningful, significant opportunities for global experiences built into programs of study. COIL enhances intercultural student interaction through proven approaches to meaningful online engagement, while providing universities a cost-effective way to ensure that their students are globally engaged. https://coil.suny.edu/

II. Activity 1: Global Virtual Engineering Design Course

Indirect/Indirect Communication and Collectivist/Individualistic mindset spectrum activity with direct poll tool.

Resource about the class: Watch the video of student ambassadors:
https://artsetmetiers.fr/fr/actualites/global-engineering-design-une-experience-internationale-domicile

III. Activity 2: Course Mapping for Curriculum Integration

Read the syllabus of Arts et Métiers course "Product manufacturing" (intermediate) on pages 2 to 3.
Questions with Padlets tool:

- If you were the person validating the syllabus for an American University degree plan, what questions would you have to complete the validation process for an exchange student ?
    - Padlet: https://padlet.com/regiskubler/7g3eol784u46phav
- On a trip to the partner university, what would you like to see and learn about the partner university to recruit students for the exchange?
    - Padlet: https://padlet.com/regiskubler/ql5rvthgk7hlez2l
- What challenges do you find for recruiting students for semester exchanges and how do you address them ?
    - https://padlet.com/regiskubler/x9we662a8n80qsl7

Syllabus Arts et Metiers Year 3

PRODUCT MANUFACTURING (INTERMEDIATE) (50H - 6 ECTS)

Objectives and desired outcomes
On successful completion of the module, students will be able to: - Describe some main material processes (tools, machine design), - Explain the physics behind the process, - Choose a process for a given application, - Implement and instrument a manufacturing tool, - Follow health and safety rules during manufacturing, - Implement the interactions between parts/processes and design/geometry - Describe and identify the defects and be able to characterize them and their physical origins in order to solve them, - Identify and implement the different control means (metrology, NDT) - Determine the interactions between materials and processing
• **Grading system:** - 4 intermediate exams + final exam - 6 practical works (TP) • **Suggested textbooks:** - Olson, D. L. (Ed.). (1993). ASM handbook: welding, brazing, and soldering (Vol. 6). Asm Intl.

Welding (10 h)	
L1 (1h)	Introduction to welding principles
	Material interactions : base metal, fusion zone, HAZ
L2 (1h)	Brazing : description of processes
L3 (1h)	Welding : description of arc welding, laser beam welding, friction stir welding
L4 (1h)	Static dimensioning of welds
EX1 (2h)	Static dimensioning of welds
TP1 (4h)	Shielded metal arc welding: process parameters, weld dimensioning
Forming (10 h)	

L1 (1h)	Introduction to forming principles
L2 (1h)	Forging : process, operating conditions
L3 (1h)	Stamping : process, operating conditions
L4 (1h)	Bending : process, operating conditions
EX1 (2h)	Stamping
TP1 (4h)	Bending
Casting (30 h)	
L1 (2h)	Molding and casting processes: Permanent and non-permanent molds, lost wax, lost foam, casting by gravity, low pressure, high pressure
L2 (2h)	Physics of solidification: Thermodynamics of phase change, solidification path, nucleation and growth of grains, macroscopic transports phenomena and induced casting defects
L3 (2h)	Thermal analysis of a part and feeders design: Thickness analysis of a part, localisation of hot spots, rules of feeder design
L4 (2h)	Filling analysis of a part and filling system design: Filling induced defects, rules of filling system design
EX1 (2h)	Development of an analytical thermal model of cooling and solidification of a plate
EX2 (2h)	Feeders localisation and design on a given part
EX3 (2h)	Filling system localisation and design on a given part
TP1 (4h)	Green sand mold making by hand, casting and analysis of the part depending on the filling system design choice
TP2 (4h)	Green sand mold making by machin, casting and analysis of the part depending on the feeders localisation and size
TP3 (4h)	Core making, metallic mold casting and analysis of the mold design and the comparison between sand and metallic mold design
TP4 (4h)	Numerical simulation of TP1 experiment, analysis of the predicted misrun and shrinkage porosities defects and comparison to experiment