

COURSE ID SHEET



Course No.	5012	NTUA					
Semester:	6	Core	X	Elective		Specialization	
Title:	PHYSICAL PROCESSES ENGINEERING II						
Aim:	The aim of this course is the analysis and design of the main unit operations processes in chemical engineering. The course deals with processes that involve mass transfer.						
Content:	▪ Introduction to unit operation design, basic principles. ▪ Flash calculations. ▪ Distillation – Principles, distillation types. – Methodologies. • McCabe – Thiele • FUG – Hydraulics/Dimensioning. – Specific distillation types. – Examples. ▪ Absorption – Desorption – Process Description - Basic Principles. – Absorption - Thin Mix Desorption. – Absorption - Thick Mix Desorption. – Examples – Exercises. ▪ Extraction – Process Description - Basic Principles of Extractor Types. – Non-miscible solvent extraction. – Miscellaneous solvent extraction. – Examples – Exercises. ▪ Membrane Operations – Process Description - Basic Principles of Membrane Separation. – Modeling Mathematical methods. – Examples – Exercises. ▪ Laboratory exercises: – Fluidized bed. – Centrifugal pump. – Heat exchange. – Air drying. – Distillation. – Crystallization. – Reverse Osmosis. – Filtration						

HOURS
PER
SEMESTER

LECTURES	26	EXERCISES	26	LABORATORY	76	HOMEWORK	40	TOTAL HOURS: 180
		PCLAB	12					

Student
performance/
Evaluation:

The evaluation of the students will be done through: – A Final (written) Examination (FE), including the solving of unit operations design and analysis problems. – Laboratory Exercises (LE). Performing 5-unit operations laboratory exercises. Delivery of report. Presentation and discussion of results. – Exercises (EX) from students which will be conducted at the PC-Lab (positive contribution). The Final Grade results as follows: Final Grade 1 = 0.5 x (FE) + 0.3 x (LE) + 0.2 x (EX), or Final Grade 2 = 0.7 x (FE) + 0.3 x (LE) Final Grade = max(Final Grade 1, Final Grade 2)
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