Separation Processes **Class Schedule**
Chemical Engineering 338

Week	Date	Topic	Reading
1	Jan 27 Tuesday	**Course Introduction** Integration of separation systems into process design	Read Chapter 1
	Jan 29 Thursday	**Phase equilibrium relations** Raoult's Law, perfect gases, ideal mixtures, activity coefficients, non-ideal mixtures	Read Ch. 2.1 - 2.2
2	Feb 3 Tuesday	**Phase equilibrium relations / Flash separations** VLE Calculations, Computational tools, Lever rule, Operating equations	Read Ch. 2.3 - 2.6 HW #1 due
	Feb 5 Thursday	**Binary distillation** Distillation column internals, Introduction to McCabe-Thiele method	Read Ch. 3.1 - 3.3
3	Feb 10 Tuesday	**Binary distillation** McCabe-Thiele, Fenske's and Underwood's equations	Read Ch. 3.4 HW #2 due
	Feb 12 Thursday	**Binary distillation** Non-ideal mixtures, feed pinches, tangent pinches	Read Ch. 3.5
4	Feb 17 Tuesday	**Binary distillation** Distillation design, sequencing , and economics	Read Ch. 3.5, 6.1 HW #3 due
	Feb 19 Thursday	**Equipment design** Degrees of freedom, theoretical number of stages, column flow and diameter, heat exchangers	Read Ch. 6.2 – 6.3
5	Feb 24 Tuesday	**Multi-component distillation** Composition profiles, general operating-line equations, ternary composition plot	Read Ch. 4.1 HW #4 due
	Feb 26 Thursday	**Multi-component distillation** Node pinches, saddle pinches, nonideal ternary mixtures	Read Ch. 4.2
6	Mar 2 Tuesday	**Multi-component distillation** Tangent pinches, more than four components: Fenske-Underwood-Gilliland, Underwood's method	Read Ch. 4.3 - 4.6
	Mar 5 Thursday	**Azeotropic distillation** Introduction, residue curves	Read Ch. 5.1 - 5.3
7	Mar 10 Tuesday	**Azeotropic distillation** Residue curves, feasibility	Read Ch. 5.4 HW #5 due (Design project)
	Mar 12 Thursday	**Exam I**	

8	Mar 17 Tuesday	*Spring Break*	
	Mar 19 Thursday	*Spring Break*	
9	Mar 24 Tuesday	**Azeotropic distillation** conceptual design, extractive distillation, using DISTIL	Read Ch. 5.5 - 5.6 HW #6 due
	Mar 26 Thursday	**Heterogeneous mixtures** Phase diagrams and residue curves	Read Ch. 8.1 - 8.3
10	Mar 31 Tuesday	**Heterogeneous mixtures** Homogeneous azeotropic distillation, entrainers	Read Ch. 8.4 - 8.5 HW #7 due
	Apr 2 Thursday	**Heterogeneous mixtures** Heterogeneous azeotropic distillation	
11	Apr 7 Tuesday	**Column Sequencing**	Read Ch. 7.1 - 7.3 HW #8 due
	Apr 9 Thursday	**Exam II**	
12	Apr 14 Tuesday	**More equilibrium-based separations** Liquid-liquid extraction	Handout
	Apr 16 Thursday	**More equilibrium-based separations** Liquid-liquid extraction and equations	Handout
13	Apr 21 Tuesday	*No Class – Monday Schedule*	*No lab – Patriots Day* HW #9 due
	Apr 23 Thursday	**More equilibrium-based separations** Liquid-liquid extraction and equations	Handout
14	Apr 28 Tuesday	**Crystallization**	Handout HW #10 due
	Apr 30 Thursday	**Crystallization**	Handout
15	May 5 Tuesday	**Crystallization**	Handout HW #11 due
	May 7 Thursday	**Absorption and rate-based separations**	Handout
16	May 12 Tuesday	**Course summary**	HW #12 due