

ESTIMATION OF GASES AND LIQUIDS PROPERTIES

1.1. Identification

University:	Universidad Politécnica de Valencia										
School:	Escuela Técnica Superior de Ingeniería del Diseño										
Course:	Estimation of Gases and Liquids Properties										
ECTS:	4										
Semester:	<i>Winter</i>					<i>Summer</i>				X	
Category	<i>Fundamental course</i>					<i>Specialisation course</i>				X	
Module	<i>MFI</i>		<i>MFII</i>		<i>MFIII</i>		<i>MSI</i>	X	<i>MSII</i>		<i>MSIII</i>
Teachers:	Laura Contat, Amparo Ribes										
Language:	<i>English</i>	X	<i>Italian</i>		<i>Swedish</i>		<i>Spanish</i>				X

1.2. Learning-outcomes

- knowledge about the thermodynamic properties of pure substances in the gaseous and liquid state.
- Knowledge about the thermodynamic properties of fluid mixtures.

1.3. Competencies

▪ General

- to have critical understanding of technical and scientific tools
- to work and manage teams
- communication skills (both written and oral)
- to work in an international context

▪ Specific

- to look for and determine thermodynamic properties of pure substances
- to use thermodynamic property databanks, tables and diagrams
- to look for and determine thermodynamic properties of multicomponent systems

1.4. Contents

Estimation of physical properties: critical constants, second virial coefficient. Properties of saturated liquids. Vapour pressures and enthalpies of vaporization. Properties of polar fluids. Method of the generalized discrepancies for the estimation of thermodynamic properties: enthalpy and entropy. Models for the estimation of mixture properties.

1.5. Teaching Methodology

- Lecture sessions
- Practical sessions: “cooperative work” for solving problems
- laboratory sessions

1.6. Evaluation

- written exams
- oral evaluation of the problems solved by “cooperative work”
- oral evaluation of laboratory work

1.7. Bibliography

- M.J. Moran, H.N. Shapiro. “Fundamentals of Engineering Thermodynamics”. John Wiley & Sons
- Y.A. Cengel, M.A. Boles. “Thermodynamics”. McGraw-Hill
- J.R. Elliot, C.T. Lira. “Introductory Chemical Engineering Thermodynamics”. Prentice Hall
- R.C.Reid, J.M. Prausnitz, T.K. Sherwood. “ The Properties of Gases and Liquids”
- H.C.Van Ness, M.M. abbot, “Classical thermodynamics of Non electrolyte solutions with applications to Phase Equilibria”. McGraw-Hill.