

Virginia Western Community College

IND 116

Applied Technology

Prerequisite

none

Course Description

Introduces basic information and problem solving techniques in liquids, gases, solids, metrics, mechanics, forces, simple machines, heat, light, sound and nuclear energy as applied in industrial engineering technologies.

This course studies the justification and use of technology for the meeting of process and product design expectations as experienced in the modern manufacturing environment. This course includes realistic examples and uses of process mathematical and physical principles that exist in the general manufacturing of products along with the skills required to manage plant assets and technologies.

Additional review is also given on product R&D, process flow and cost justification from a management perspective as well as a basic overview of fundamental electrical theory and common chemical processes found in today's industry. Lecture 9 hours per week..

Semester Credits: 3 Lecture Hours: 2 Lab/Recitation Hours: 2

Required Materials

Textbook:

(TBD) Toolingu online subscription, available: Online at www.toolingu.com
(Resources/Pricing) or through the Bookstore.

Other Required Materials:

Scientific calculator – know your calculator!
Folder or notebook for class notes

Course Outcomes

At the completion of this course, the student should be able to:

- Will have an appreciation for the technologies used in today's manufacturing environment
- Will have acquired a working knowledge as to how product design and development are achieved
- Will understand how process and chemical interactions shape materials into desired and determined products
- The student should be able to better understand the organization, planning, capital and process requirements that are required to yield a successful and profitable manufacturing enterprise.

Topical Description

COURSE WEEK	CHAPTER TO BE REVIEWED	ASSIGNMENTS
Week 1:	Course Intro and Section I Section II Mathematics and Science for IND	Pages 1-2 Pages 5-11
Week 2:	Section II Formulas and Conversions Section III Intro to Fluid Mechanics	Pages 12-15 Pages 23-27
Week 3:	Section III Pumps Section IV Hydraulics	Pages 28-35 Pages 40-44
Week 4:	Section IV Hydraulics Section IV Review and Quiz	Pages 45-52 Review pages 1-52
Week 5:	Section V Basic Electrical Theory Section V Electric Motors and Circuits	Pages 56-63 Pages 64-68
Week 6:	Section VI Automation and Control Section VI Sensors and Control Devices	Pages 73-87 Pages 88-113
Week 7:	Section VII Process Instrumentation Symbols	Pages 115-120

	Section VII Review and Quiz	Review pages 53-120
Week 8:	Section VIII Programmable Logic Controller Section VIII Truth Tables and Class Exercise	Pages 125-131 Pages 132-135
Week 9:	Section IX Heat, Energy Transfer & Psychrometrics Section IX Thermo and Energy Systems	Pages 136-138 Pages 139-154
Week 10:	Midterm Exam Section X Mass Balance of Process Systems Exercise X-1.0 Mass Balance	Pages 1-154 Pages 159-161
Week 11:	Section XI Basic Material Removal Processes Section XII Material Handling and Bulk Conv	Pages 169-171 Pages 185-190
Week 12:	Section XIII Ingredient Material Flow Section XIV Basic Chemistry Review	Pages 206-207 Pages 211-225
Week 13:	Section XVII Basic Chemistry	Pages 168-185
Week 14:a	Section XVIII New Product Development	Pages 231-246
Week 14b	Section XVIII New Product Development Review	Pages 231-246
Week 15:	Week 1 -14 Review	Pages 1 - 246
Week 16:	Final Exam	Final Exam

Notes to Instructors

1. The final exam is worth 15-20% of the final grade.