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| COURSE #: CHE 488 (2 credits) | | COURSE TITLE: Chemical Product Design I |
| TERM OFFERED: Fall | | PREREQUISITES: CHE 344: Reaction Engineering & Design, preceded or accompanied by CHE 360: Chemical Engineering Laboratory I |
| TEXTBOOKS/REQUIRED MATERIAL: None | | COGNIZANT FACULTY: Hirshfield, Tadd, Wisniewski |
| INSTRUCTORS: Hirshfield, Wisniewski | | FACULTY APPROVAL: 2019-11-05 |
| CoE BULLETIN DESCRIPTION: Part one of a two-semester chemical product design sequence. Teams develop the process for a new chemical product that meets industrial, federal, and local regulations. Market research, survey development and data analysis, literature research, and product development planning for laboratory testing. Oral and written technological feasibility reports. | | COURSE TOPICS: (approximate number of hours in parentheses) 1. Team dynamics and interpersonal relationships (2) 2. Market Analysis (4) 3. Technology Analysis (6) 4. Conceptual Product Design (2) 5. Process Design (2) 6. Team meetings with instructor (4) 7. Safety & Environmental Issues (4) 8. Technical communication (8) |
| COURSE STRUCTURE/SCHEDULE: Lecture: 2 per week, 1 hour. | | |
| COURSE OBJECTIVES | Links shown in brackets are to course outcomes that satisfy these objectives. 1. To provide a basis for students to effectively function in teams on a major project [a-g]. 2. To equip students to assess a market need and prepare a development plan for laboratory testing [a-f]. 3. To equip students to design products consistent with the constraints that govern (process, environmental, safety, regulatory) [d, e]. 4. To equip students to integrate economic realities into all stages of the Design and Development process [d, f]. 5. To develop student's skills in written and oral technical communication [b, c]. 6. To develop a strong ethical awareness in chemical engineering students [d]. | |
| COURSE OUTCOMES | Links shown in brackets are to ABET student outcomes 1-7. a. Research and analyze technical and business-related information [1,7]. b. Write, edit, revise, and critique technical memos and formal written reports [3]. c. Prepare and present effective oral reports [3]. d. Identify technology that meets the engineering and economic requirements defined by the marketplace [2]. e. Determine a logical sequence of interconnected unit operations to produce the product designed, with consideration of global, cultural, economic, and public health factors [2]. f. Design a development program to enable and validate a design [2]. g. Work as a member of a team [5]. | |
| ASSESSMENT TOOLS | 1. Regular team meetings with the course instructors and peer evaluations assess course outcomes a, d-g 2. Oral reports assess outcomes a, c-g 3. Written reports assess outcomes a-b, d-g | |