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| Course | ME 42100 - Heating and Air Conditioning I |
| Type of Course | Elective for ME program |
| Catalog Description | Fundamentals of fluid flow and heat transfer. Comfort conditions. Psychometrics. Solar radiation. Design conditions. Heating and cooling loads. Ventilation. Air distribution. Fans and pumps. Duct design. Air conditioning system. |
| Credits | 3 |
| Contact Hours | 3 |
| Prerequisite Courses | ME 32100 |
| Corequisite Courses | None |
| Prerequisites by Topics | Heat Transfer |
| Textbook | <i>Principles of Heating, Ventilating, and Air Conditioning</i> , Sauer, Howell, and Coad, ASHRAE, current edition. |
| Course Objectives | To review the principles of thermodynamics, fluid mechanics, and heat transfer as they apply to the thermal conditioning of spaces and to give students a general introduction to the principles of HVAC analysis and design. |
| Course Outcomes | Students who successfully complete this course will have demonstrated an ability to: <ol style="list-style-type: none">1. Perform heating load calculations. (1)2. Perform cooling load calculations. (1)3. Size and design duct and pipe distribution systems. (1,2)4. Apply the knowledge gained in items 1-3 to a real-life structure, such as an office building or residence and communicate the results. (2,3)5. Learn about new and current technology in the field of heating and air conditioning and report finding. (3,7) |
| Lecture Topics | <ol style="list-style-type: none">1. Introduction, systems, costs2. Thermodynamics/heat transfer review3. Psychometrics4. Design conditions/comfort and health5. Heating/cooling loads |

6. Energy usage and calculations
7. Ducts and pipes
8. Air and water systems
9. Paper presentations

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| Computer Usage | Medium |
| Laboratory Experience | None |
| Design Experience | Medium |
| Coordinator | Donald Mueller, Ph.D., P.E. |
| Date | 27 June 2018 |