Michael Klautzsch Jr.

61318 SW Swarens Ave., Bend, Oregon 97702
Tel: (541) 207-7288 - Email: klautzsm@oregonstate.edu

Course Work Addendum:

Electrical Fundamental I & II - Sinusoidal steady-state analysis and phasors. Application of circuit analysis to solve single-phase and three-phase circuits including power, mutual inductance, transformers and passive filters.
Engineering Computing - Systematic approaches to engineering problem solving using computers (MATLAB and Python). Logical analysis, flow charting, input/output design, introductory computer programming and use of engineering software.
Engineering Graphics & 3D Modeling - graphical communication theory, including freehand sketching techniques, geometric construction, multi-view, pictorial, sectional and auxiliary view representation and dimensioning techniques. Practical application of theoretical concepts using solid modeling software to capture design intent and generate engineering drawings.
Statics - Analysis of forces induced in structures and machines by various types of loading.
Strength of Materials - Properties of structural materials; analysis of stress and deformation in axially loaded members, circular shafts, and beams, and in statically indeterminate systems containing these components.
Dynamics - Kinematics, Newton's laws of motion, and work-energy and impulse-momentum relationships applied to engineering systems.
Industrial Systems Optimization - Operations research; mathematical programming formulations and solutions, the simplex method, network optimization, introduction to metaheuristics, and linear programming under uncertainty.
Simulation & Decision Support Systems - Analysis of operations and production systems through the application of computer simulation modeling techniques. Fundamentals of computer simulation, including random number generation, input/output data analysis, model validation and verification.
Intro to Thermal Fluid Science - Basic concepts of fluid mechanics, thermodynamics and heat transfer are introduced. Conservation of mass, energy, moment and the second law of thermodynamics.
Introductory Fluid Mechanics - concepts and applications of fluid mechanics and dimensional analysis with an emphasis on fluid behavior, internal and external flows, analysis of engineering applications of incompressible pipe systems, and external aerodynamics.
Fluid Mechanics - introduces the concepts and applications of fluid mechanics and dimensional analysis with an emphasis on fluid behavior, internal and external flows, analysis of engineering applications of incompressible pipe systems, and external aerodynamics.
Thermodynamics - Energy destruction, machine and cycle processes, law of corresponding states, non-reactive gas mixtures, reactive mixtures, thermodynamics of compressible fluid flow.
Heat Transfer - treatment of conductive, convective and radiative energy transfer using control volume and differential analysis and prediction of transport properties.
Energy Consumption Analysis - Analysis of energy use in transportation, residential and industrial sectors to understand how new technologies improve energy efficiency. Tradeoff techniques applied to decide between less efficient, less expensive systems versus more efficient, more expensive systems. International energy consumption compared, and energy losses evaluated for heating, cooling and electronic systems.
Energy Regulation - policies and laws governing energy generation and transmission in the United States with a focus on electricity. History of regulations give context to understand current regulation and potential future policies. Laws regulating the use of alternative energy resources covered in a practical setting.
Energy Generation Systems - survey of technical fundamentals and operational principles of conventional and renewable energy conversion systems to understand the environmental and sustainable issues for energy systems currently in use or may be used in the future to power our industrial society.
Energy Storage Systems - Coverage of energy storage techniques involving electrochemical, mechanical and emerging options. Integration of the energy storage media, its effects on the bulk power system, and design tradeoffs to understand environmental impacts, cost, reliabilities, and efficiencies for commercialization of bulk energy storage.
Feedback Control Systems - Modeling and analysis of linear, continuous-time systems in the time and frequency domains. Fundamentals of single-input-single-output control system design using both time-domain and frequency-domain techniques.