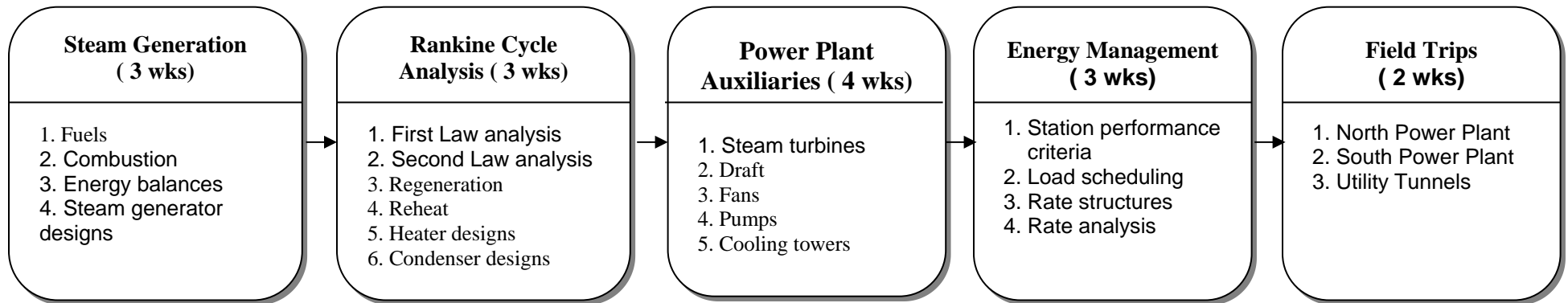


ME 430
POWER ENGINEERING

Course Outcomes [Related ME Program Outcomes in brackets]

1. Provide a basic understanding of the *operation, construction* and performance of *fossil fuel power plant equipment*. [A2, A3]
2. Provide a basic knowledge of the *generation and distribution* of *electric power*. [A2, A3]



COURSE NUMBER: ME 430

COURSE TITLE: Power Engineering

REQUIRED COURSE OR ELECTIVE COURSE: Elective

TERMS OFFERED: Fall

TEXTBOOK/REQUIRED MATERIAL: *Powerplant Technology*, M. M. El-Wakil, McGraw-Hill, 2002, ISBN 0072871024

PRE-REQUISITIES: ME 200 Thermodynamics I

COORDINATING FACULTY: Heather L. Cooper, MET Department

COURSE OUTCOMES [Related ME Program Outcomes in brackets]:

COURSE DESCRIPTION: Rankine cycle analysis, fossil-fuel steam generators, energy balances, fans, pumps, cooling towers, steam turbines, availability (second law) analysis of power systems, energy management systems, and rate analysis.

1. Integration of *fundamentals* (thermodynamics, heat transfer, fluid mechanics, numerical methods) to solve practical problems. [A2, A3, A5, A7]]
2. Provide fundamental understanding necessary to design and analyze systems and equipment used in conditioning buildings. [A2, A3, A5, A7]

ASSESSMENT TOOLS:

1. Biweekly homework.
2. Three field trips.
3. Two one-hour exams.
4. One comprehensive final exam.

RELATED ME PROGRAM OUTCOMES:

- A2. Engineering fundamentals
- A3. Analytical skills
- A5. Open-ended design problem solving skills
- A7. Integ. of analy./problem solving/design skills

PROFESSIONAL COMPONENT:

1. Engineering Topics: Engineering Science – 2.5 credits (83%)
Engineering Design – 0.5 credits (17%)

NATURE OF DESIGN CONTENT: Problems of a design nature are included in some of the daily homework assignments. Examples are: determining the necessary boiler pressure in a Rankine cycle to obtain a given cycle efficiency and determining the terminal temperature difference of high pressure feedwater heaters to obtain a given cycle efficiency. A minimum of two weeks of class discussion and the required field trips deal with the actual design of a power plant components and the overall system design.

COMPUTER USAGE: Computer usage is required for steam tables and for some homework problems. Students are required to use EES.

COURSE STRUCTURE/SCHEDULE:

1. Lecture – 3 meetings per week at 50 minutes.

PREPARED BY: Heather Cooper, MET

REVISION DATE: May 1, 2007