

## Chapter 1 Instructor Notes

Chapter 1 is introductory in nature, establishing some rationale for studying electrical engineering methods, even though the students' primary interest may lie in other areas. The material in this chapter should be included in every syllabus, and can typically be thoroughly covered in a single-day introductory lecture. Oftentimes, reading of this material is left up to the discretion of the student.

## Chapter 1 problem solutions

### 1.1 A few examples are:

#### Bathroom

ventilation fan  
electric toothbrush  
hair dryer  
electric shaver  
electric heater fan

#### Kitchen

microwave fan  
microwave turntable  
mixer  
food processor  
blender  
coffee grinder  
garbage disposal  
ceiling fan  
electric clock  
exhaust fan  
refrigerator compressor  
dish washer

#### Utility Room

clothes washer  
dryer  
air conditioner  
furnace blower  
pump

#### Family Room

VCR drive  
cassette tape drive  
reel-to-reel tape drive  
record turntable drive  
computer fan

treadmill

#### Miscellaneous

lawn tools  
power tools

### 1.2

Several examples are listed below for each system:

#### a) A ship

##### Circuit Analysis

design of the ship's  
electrical system

##### Electromagnetics

radar

##### Solid-State Electronics

radio  
sonar

##### Electric Machines

pump  
elevator

##### Electric Power Systems

lighting  
generators

##### Digital Logic Circuits

elevator control

##### Computer Systems

navigation

##### Communication Systems

radio  
telephone

##### Electro-Optics

Morse light  
bridge displays

Instrumentation compass speed indicator Control Systems rudder HVAC		Control Systems rudder flaps
b) A Commercial Passenger Aircraft	c)	Household
Circuit Analysis Design of the plane's electrical system		Circuit Analysis design of the home's electrical system
Electromagnetics radar microwave oven		Electromagnetics microwave oven stereo speakers
Solid-State Electronics radio		Solid-State Electronics television stereo VCR
Electric Machines turbines fans		Electric Machines appliances power tools fans
Electric Power Systems lighting HVAC		Electric Power Systems lighting HVAC
Digital Logic Circuits seat belts		receptacles Digital Logic Circuits
Computer Systems navigation		clocks timers
Communication Systems radio telephone		Computer Systems microwave oven programmable VCR
Electro-Optics cockpit displays		Communication Systems
Instrumentation compass air speed indicator inclinometer altimeter		telephone CB radio television radio Electro-Optics

digital clocks

Instrumentation

electric meter

Control Systems

thermostat

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### 1.3

Some examples are:

a) HVAC

lighting

office equipment

typewriter

computer

copy machine

clock

stapler

shredder

elevator

b) conveyor

punch press

lighting

ventilation

drill press

hoist

lathe

c) power saw

drill

lighting

elevator

pump

compressor

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