Lecture #45

ERDM

Prof. John W. Sutherland

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Final

Course Review

Lecture 1: Big picture -- trends

Lecture 2: More big picture, course overview

Lecture 3: Definitions, organic chemicals, metals/ inorganics

Lecture 4: MLK day

Lecture 5: Environmental Law

Lecture 6: Pollution Control Systems

Lecture 7: Automotive Overview, Design, DFE

Lecture 8: Design, LCA, Materials Selection

Lecture 9: Materials, Flow Charts, Mining, Materials Refining/Processing

Lecture 10: Automotive recycling, materials selection, plastics, plastics processing issues

Lecture 11: Product Design Process, QFD

Lecture 12: Winter Carnival

Lecture 13: Product design -- 3 R's, feature selection

Lecture 14: Quality & Reliability

Lecture 15: Quality, Reuse, Satisfaction, & Value

Lecture 16: Loose Ends, DFE principles, take-back, disassembly

Lecture 17: Disassembly

Lecture 18: Disassembly, disassembly planning, Materials

Lecture 19: Fasteners & Joints

Lecture 20: Automotive Recycling infrastructure (Kumar)

Lecture 21: Manufacturing systems, assembly, simulation, inventory, site placement, collection sys.

Lecture 22: Route selection, branch & bound, demanufacturing

Lecture 23: Midterm

Lecture 24: Old Topics + hazard assessment & risk

Lecture 25: More on hazards & risks

Lecture 26: Manufacturing overview

Lecture 27 & 28: EBM -- Status & Vision for the Future

Lecture 29: Manufacturing waste streams, EHS, air quality

Lecture 30: Casting

Lecture 31: Forming, sheet-working

Lecture 32: Minimizing engineered waste, machining

Lecture 33: Cutting fluid issues

Lecture 34: Joining

Lecture 35: Life-cycle selection of coatings

Lecture 36: Painting

Lecture 37: Nontraditional Manufacturing

Lecture 38: Electronics Manufacturing

Lecture 39: Decision-making

Lecture 40: Decision-making, process planning

Lecture 41: Process planning, Input-output analysis

Lecture 42: Input-output analysis, EIO-LCA

Lecture 43: Software tools, Corporate initiatives, student proposals

Lecture 44: ISO 14000

Lecture 45: Course review

Questions??

Readings

Reading I: WTEC report
Reading II: Environmental Regulations & Laws
Reading III: Material Flow in Industry
Reading IV: Fasteners
Reading V: Design for Disassembly
Reading VI: Pinch Technology
Reading VII: Electronics Takeback Summary
Reading VIII: WEEE Directive
Reading IX: RoHS Directive
Reading X: ISO 14000 (pdf type)

Final Comments

- **Many of you will be leaving MTU -- good luck!!**
- **You have a great education -- your potential is unlimited -- don't settle. Aim high!!**
- **Never stop learning. A BS degree is only a first step.**
- **Got questions -- contact us.**
- **Stop in one of these days (or drop us a note) & let us know how you are doing.**