

Topics for Today:

- Introductions - about 14 enrolled (maybe a few more adding)
  - 6 students on campus (in classroom)
  - 8 online students
- Startup
  - Web page: <http://www.ee.mtu.edu/faculty/bamork/ee5200/>
  - Book, references, syllabus, more are on web page.
  - Software - Matlab\*, ASPEN, ATP/EMTP, spreadsheets
  - Participation/proactivity is 5-10% of grade (e-mail forum, etc)
  - Lectures - new videostreams, archived video tutorials
  - Daily lecture notes scanned and .pdf file archived
  - Exercises posted as pdf on web page.
  - Grading: grad students must achieve BC (75%) or higher
  - Grader: <\_\_\_\_\_@mtu.edu> Office: EERC SB27

\* On-line: remote desktop, AppsAnywhere, or student version

- REVIEW, remedial: - Circuit Analysis Basics (Pre-Req Lect. #1)
  - Do all exercises in Ch.1 (solutions are posted)
  - Active vs. passive sign convention
  - Dual-subscript notation, single-subscript (implied reference)
  - Closure of subscripts in mesh equation
  - Euler's Identity - basis for phasor analysis! See handout.
  - Drawing phasor diagrams, arrowheads
  - Three-phase, "open" vs. "closed" voltage phasor diagrams
  - Errata in text book - Figs. 1.16, 1.17.
- Study Chapters 1 and 2, view archive lectures 1-4
- There are three lecture modules/week, covered in 2 meetings.

## Prerequisite Material, Useful References (see course web page)

- Euler's Identity - The foundation of phasor analysis, as well as hyperbolic functions (used for long transmission lines)
- Basic Circuit Analysis, Thevenizing, Phasor Analysis, Impedance, P,Q,S, etc.: EE3120 pre-req practice problems | Solutions
- Basic 3-Phase Phasor Analysis - Review problem from EE3120
- Magnetic Circuits - quick review and introduction of how a transformer works
- Mutual Inductance - concept handout from EE3120 (refer to Section 2.2 of your text)
- Transformers 101 - Everything you wanted (or suddenly need to know) about transformers but were afraid to ask...
- Delta-Wye Transformer - detailed example with solution from EE3120
- EE 4221 Pre-Req Course Description
- EE 4222 Pre-Req Course Description
- Pre-Req Review Videos with Notes (from 2003 Archives)
  - Basic Circuit Analysis, Phasors, Three Phase Phasors: Lect 1 (skip first 12 mins) | Lect 1 Notes
  - Phasor Diagrams, Ideal Transformers, Nodal Analysis: Lect 2 (skip first 6:20) | Lect 2 Notes
  - Nodal Analysis, 3-phase circuits, Deltas and Wyes, Per Unit System: Lect 3 (skip first 3 mins) | Lect 3 Notes
  - Active & Passive Sign Convention for power flow, Per Unit, Transformers, Symmetrical Components: Lect 4 (skip first 2 mins) | Lect 4 Notes
  - Transformers, Induced Voltage & Polarity Marks, Phase Shift: Lect 5 (skip 3:45 - 5:20) | Lect 5 Notes
  - Phase Shift in Transformers, Phasor Diagrams, Application of Symmetrical Components: Lect 6 (skip first 3 mins) | Lect 6 Notes
- Matlab Programming (fundamentals). Tutorials: [ Part 1 Notes | Part 1 Video ]; [ Part 2 Notes | Part 2 Video ]
  - Sample .m files from above tutorials: | for\_ex.m | r2p.m | for\_if\_ex.m | while\_ex.m | ft.m |

## TIME MANAGEMENT

- Plan on min 10 hrs/wk of focused productive time.
- Grad courses draw on pre-req concepts from undergraduate courses, so some weeks may be more.
- Online students:
  - View lectures at time convenient to work schedule.
  - Must keep to the same week-by-week schedule as on-campus students.
- Online students may have field assignments or need to travel. Flexible, but you need to follow weekly deadlines.
- Homeworks:
  - Look it over early on, start discussions on e-mail forum
  - Take advantage of e-mail discussions: combine practical knowledge of online students with applied math and theoretical knowledge of on-campus folks.
  - Grad courses – can't wait 'til the night before to get started – there is no way you can complete it.