Preliminary QE TOPICS AND REFERENCES
August 2004 QE

EXAM DATE: Thursday, August 19, 2004

The student is responsible for reading the ECE document "Rules and Procedures for the Ph.D. Qualifying Examination."

WHAT'S DROPPED?
AC-3, AC-4, AC-5, BE-1, BE-2, BE-4, CS-3, CE-1, CE-2, VC-2, VC-3

WHAT'S ADDED?
AC-6

CORE COURSES

CC-1 ECE 600

CC-2 ECE 602
- Class Notes

CC-3 ECE 604

CC-4 ECE 606

CC-5 ECE 608
CC-6  ECE 610


**AUTOMATIC CONTROL**

_Basic Questions_

**AC-1  Robotics**


- Class handouts from ECE 569


**AC-2  Optimization**


- Lecture notes from ECE 580

**AC-3  DROPPED**

**Advanced Questions**

**AC-4  NOT OFFERED**

**AC-5  NOT OFFERED**

**AC-6  Modern Automatic Control**


- Lecture Notes from ECE 680

**BIOMEDICAL ENGINEERING**

_Basic Questions_

**BE-1  DROPPED**
BE-2  DROPPED

BE-3  Engineering and the Nervous System


- Any neuroimaging-modality related text (e.g., *Functional Brain Imaging*, by W. W. Orrison, Jr., J. D. Lewine, J. A. Sanders and M. F. Hartshorne, Mosby-Year Book, (1995)).

- Chapters related to sensory systems in neuroimaging texts (e.g., *Functional MRI*, by C. T. Moonen, P. A. Bandetti (eds.), Springer-Verlag, (1999); *Brain Activation*, by P. E. Roland, Wiley-Liss, (1999)).

- Chapters on sensory systems in engineering-related texts (e.g., *Acoustic Systems in Biology*, by N. H. Fletcher, Chapters 4, 6, 8, 9, and 12, Oxford University Press, (1992)).

- Class notes from ECE 622

BE-5  Medical Imaging

- Principles of Computerized Tomographic Imaging (Classics in Applied Mathematics, 33), Avinash C. Kak, Malcolm Slaney, SIAM, ISBN: 089871494X; (July 1, 2001)

- Any of the following:
  


  A student who has mastered the material in:
  ECE 641 Digital Image Processing II
  ECE 662 Pattern Recognition and Decision Making Processes
  ECE 620 Introduction to Biomedical Imaging Systems
  will be adequately prepared.

Advanced Questions

BE-4  DROPPED

COMMUNICATIONS & SIGNAL PROCESSING

Basic Questions

CS-1  Digital Signal Processing Principles, Algorithms, and Applications

CS-2 Communications


CS-3 DROPPED

CS-4 Networking


The questions will not necessarily be connected to specific courses; however, students who take ECE 538, ECE 544, and ECE 547 will be adequately prepared for the exam.

**COMPUTER ENGINEERING**

Basic Questions

CE-1 DROPPED

CE-2 DROPPED

CE-3 Artificial Intelligence


CE-4 Computer Architecture


CE-5 Software


**ENERGY SOURCES & SYSTEMS**

Basic Questions

ES-1 Electromechanical Energy Conversion

ES-2  Power Electronics


**FIELDS & OPTICS**

FO-1  Electrostatics, Magnetostatics and Quasistatics


FO-2  Waves and Time-Varying Fields


FO-3  Waves and Time-Varying Fields


**MICROELECTRONICS & NANOTECHNOLOGY**

(Formerly Solid State Devices & Materials (SS))

**Basic Questions**

MN-1  Semiconductor Fundamentals


MN-2  Semiconductor Devices


**VLSI & CIRCUIT DESIGN**

**Basic Questions**

VC-1  Integrated Circuit and/or MOS VLSI Layout and Design

- Lecture Notes from ECE 558/559. The contents of lecture notes are also covered in:


**VC-2** DROPPED

**VC-3** DROPPED

**VC-4** Advanced VLSI Design

• Lecture Notes from ECE 695KR
