
Ph.D. Qualifying Examination

**Department of Electrical and Computer Engineering
Stevens Institute of Technology
Hoboken, NJ 07030**

IMPORTANT

*This announcement includes important information regarding the ECE Qualifying Examination for **Fall 2008**. Please read this carefully before you register the exam. Should you have any questions, please contact the ECE office at Burchard 212, email: cjololia@stevens.edu*

Term: Fall 2008

Registration Deadline:

Wednesday, October 1, 2008

Students **MUST** register the qualifying exam with Cecilia before the deadline, including your name and choice of subjects.

Exam Dates:

Monday 10/20/2008 and Tuesday 10/21/2008

Exam Time:

1:00 pm – 5:00 pm

Exam Room:

To be decided. Students will be informed the exam room one week in advance.

Special Notes:

This is a CLOSED book exam (No books or notes permitted);

Calculator is allowed;

No cell phones and other portable electronic devices;

Electrical Engineering

Part 1 (All 3 required):

1. Analytic Methods (Prof. Yi Guo)

Textbook:

Lancaster & Tismenetsky, The Theory of Matrices, Academic Press, 1985, Chapters 1-5, 9, and 13.

2. Linear Systems (Prof. Yu-Dong Yao)

Textbook:

A.V. Oppenheim and A.S. Willsky, Signals & Systems, 2nd ed, Prentice Hall:1996, Chap. 1-7, 9, 10.

3. Probability and Stochastic Processes (Prof. Harry Heffes)

Textbook:

Leon-Garcia, Probability and Random Processes for Electrical Engineering, 2nd ed, Addison Wesley, 1994; *or*

S. Ross, A First Course in Probability, Fifth Edition, Prentice Hall, 1997

Part 2 (Choose any 2 subjects):

1. Communications (Prof. Yu-Dong Yao)

Textbook:

B. Sklar, Digital Communications, Fundamentals and Applications, 2nd ed., Prentice Hall, 2001, Chap.1-4, 15.

2. Digital signal processing (Prof. Hongbin Li)

Textbook:

Sanjit K. Mitra, Digital Signal Processing - A Computer-Based Approach, 3e with DSP Laboratory using MATLAB, 3rd edition, McGraw Hill (Chapters 2 to 10).

3. Networks (Prof. Rajarathnam Chandramouli)

Textbook:

A. Leon-Garcia, Indra Widjaja, Communication Networks: Fundamentals Concepts and Key Architectures, 2nd ed., McGraw-Hill, 2001, Ch. 2,3,5,6,7.

4. Control systems (Prof. Yi Guo)

Textbook:

G. F. Franklin, J. D. Powell and A. Emami-Naeini, Feedback Control of Dynamic Systems, Fourth Edition, Prentice-Hall, Chapters 1-5, 7, 9

5. Embedded systems (Prof. Yan Meng)

Textbook:

Jane W. S. Liu, Real-Time Systems, Prentice-Hall, Inc. 2000, ISBN: 0-13-099651-3. Chapters 5, 6 and 8

6. Security (Suba)

Textbook:

Cryptography and Network Security, William Stallings, Prentice Hall, Chapters: 2,3,5,6,10,11

Computer Engineering

Part 1 (Choose any 3 subjects):

1. Data Structures and Algorithms (Prof. Yingying (Jennifer) Chen)

Textbook:

Introduction to Algorithms, 2nd Edition. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, MIT Press. Chapters: 4.3, 6.1-6.5, 7.1-7.4, 8.1-8.4, 10.1-10.3, 11.1-11.4, 12.1-12.3, 22.1-22.4, 23.1-23.2, 24.1-24.3.

Data Structures and Algorithm Analysis in C++, Mark Allen Weiss, 3rd Edition, Published by Addison-Wesley, 2006. Chapters 3, 4.1-4.3, 5.1-5.4, 6.1-6.3, 7.1-7.7, 9.1, 9.2, 9.3, 9.5, 9.7

2. Computer Architecture & Software Sys (Prof. Haibo He/ Prof. Rajarathnam Chandramouli)

Textbook:

John L. Hennessy and David A. Patterson, Computer Architecture: A Quantitative Approach, Third Edition, Morgan Kaufmann Publishers, 2003, Chapters: 1 to 5 and Appendix A;

Operating Systems: Internals and Design Principles, 5th Edition, Prentice Hall, 2004

3. Computer Networks (Prof. Rajarathnam Chandramouli)

Textbook:

A. Leon-Garcia, Indra Widjaja, Communication Networks: Fundamentals Concepts and Key Architectures, McGraw Hill, Chapters: 2,3,5,6,7.

4. Multimedia Info. Processing (Prof. Hong Man)

Textbook:

Multimedia Communications, Applications, Networks, Protocols and Standards, by Fred Halsall, Addison-Wesley/Pearson, Chapters: 1, 2, 3, 4, 5

Digital Image Processing, Second Edition, by Rafael C. Gonzalez and Richard E. Woods, Prentice Hall, 2002, Chapters: 1, 2, 3, 4.1-5, 5.1-8, 6.1-5, 8, 10.1-4, 11.1-3

Part 2 (Choose any 2 subjects):

1. Security (Prof. K.P. Subbalakshmi)

Textbook:

Cryptography and Network Security, William Stallings, Prentice Hall, Chapters: 2,3,5,6,10,11

2. Control systems (Prof. Guo)

Textbook:

G. F. Franklin, J. D. Powell and A. Emami-Naeini, Feedback Control of Dynamic Systems, Fourth Edition, Prentice-Hall, Chapters 1-5, 7, 9

3. Embedded systems (Prof. Yan Meng)

Textbook:

Jane W. S. Liu, Real-Time Systems, Prentice-Hall, Inc. 2000, ISBN: 0-13-099651-3.
Chapters 5, 6 and 8

4. Probability and Stochastic Processes (Prof. Harry Heffes)

Textbook:

Leon-Garcia, Probability and Random Processes for Electrical Engineering, 2nd ed,
Addison Wesley, 1994; *or*
S. Ross, A First Course in Probability, Fifth Edition, Prentice Hall, 1997

5. Machine learning and data mining (Prof. Haibo He)

Textbook:

T. M. Mitchell, Machine Learning, McGraw Hill, 1997, Chapters 1, 2.1-2.6, 3, 4.1-4.8,
6, 7.1-7.4, 8.1-8.3, 13.1-13.3.

6. Robotics (Prof. Yan Meng)

Textbook:

R. Siegwart and I. R. Nourbakhsh, Introduction to Autonomous Mobile Robots, MIT
Press, 2004. ISBN 0-262-19502-X.

Frequently Asked Questions (FAQ):

Q: When will next qualifying exam be offered?

A: The ECE department plan to offer the Qualifying exam **ONCE** a year in the future.
Announcement will be made from the ECE department office (e-mail) a few months
before each qualifying exam.

Q: What courses should I take before selecting the qualifying exams?

A: ECE qualifying exam are “area oriented”. The intention is to decouple each subject
with individual courses. Students should consult this with their advisors as well as the
faculty members offering related courses.

Q: How do I know the coverage for each subject?

A: Students should carefully review the textbook(s) specified in the qualifying exam
announcement for the semester he/she plan to take this exam.

Q: What kind of questions can I expect and can I get copies of past exam papers?

A: You may discuss with the professor for each subject and obtain old exam papers from
the department office (Cecilia Jololian).

Good Luck!
