Subject: **Computer and Broadband Networks**

Summary: This exam will evaluate the student's undergraduate and junior graduate understanding of Computer Communications, Networks, and the related areas of probability, stochastic processes, and the elements of queuing theory. The specific subjects to be addressed at this level are provided as keywords below. In the case of protocols, detailed knowledge of all fields and states is not required. What is required is knowledge of the principal functions and the effect that choices between protocols and options have on performance together with an understanding of the reasons why layered architectures and protocols are organized as they are.

Keywords

- Layered network architectures.
- The OSI model.
- Statistical multiplexing.
- Data-link protocols.
- Packet switching networks.
- Routing.
- Flow control.
- Error control.
- Local networks.
- IEEE 806 committee standards.
- Medium-access control.
- FDDI.
- Network and internet protocols, segmentation, and reassembly.
- Performance analysis applied to the previous topics.
- Principles and common functions of transport layer protocols.
- Probability and random variables up to functions of a random variable.
- Autocorrelation and related functions of a random process.
- Markov processes.
- Queuing theory including principles of M/M/1 and M/G/1 and related queues and their application to data links, packet switching, and statistical multiplexing.