Bachelor of Science in
Networking and System Administration (NaSA)
Program Course Composition At a Glance

810:041. Computer Organization
Introduction to basic computer structures and assembly language programming. Machine-level representation of character and numeric data; assembly-level machine organization; addressing methods and program sequencing; instruction sets and their implementations.

810:061, 810:062, 810:063. Computer Science I—III
Introductory courses for CS majors. Introduction to computer programming in the context of a modern object-oriented programming language through design, and implementation. Abstract data types including stacks, queues, lists, strings, trees, and graphs; implementation of these structures and basic algorithms for manipulating them.

810:080. Discrete Structures
Topics include propositional and first-order logic; proofs and inference; mathematical induction; sets, relations, and functions; and graphs, lattices, and Boolean algebra, all in the context of computer science.

810:143(g). Operating Systems
History and evolution of operating systems; process and processor management; primary and auxiliary storage management; performance evaluation, security, and distributed systems issues; and case studies of modern operating systems.

810:140(g). System Administration
Concepts and mechanisms associated with computer system administration. The main focus is on issues surrounding user management, the configuration of services, and the coordination of distributed resources.

810:141(g). System Security
Security services, basics of cryptology, historical ciphers, public key paradigms, hardware and software implementations, and standard protocols used for securing mail, web, and electronic commerce. Network monitoring, intrusion detection, sensor deployment, forensics and managing services in hostile networks.

810:147(g). Networking
Network architectures and communication protocol standards Topics include communication of digital data, data-link protocols, local-area networks, network-layer protocols, transport-layer protocols, applications, network security, and management.

810:180. Undergraduate Research in Computer Science

330:037. Introduction to Circuits
Introduction to AC circuits, in-depth DC circuits. Current and voltage laws, circuit analysis including series and parallel circuits, inductance, capacitance, introductory magnetism. Power calculations and electrical measurements, circuit simulation, troubleshooting techniques.

330:041. Introduction to Analog Electronics
Characteristics and applications of small signal electronics: diodes, transistors, amplifiers and their applications. Electronics circuit simulation and troubleshooting.

330:039. Circuits and Systems
AC circuits including j operators, phasors, transformers, reactance, capacitance, impedance, AC resonance, frequency response, passive filters, network theorems and circuit simulation.

330:156(g). Advanced Digital Electronics
Advanced study of microprocessor architecture interfacing, memory devices, digital and analog interfaces, multiplexing, sequential circuit analysis and synthesis. Microprocessor hardware selection and design.

330:103. Electronic Communications I
Analog communications concepts including AM, FM, FSK, SSB, and supporting-integrated concepts such as detections, receivers, transmitters, networks, filters, and antennas.

330:104. Electronic Communications II
Digital communications and networking concepts including RS 232/422, GPIB 488, IEEE 1284, LAN, ETHERNET, ATM, and related standards.

330:152(g). Advanced Analog Electronics
Applications of transistors, power diode, SCR, TRIAC, and ICs. Large signal and PWM amplifiers. Measurement and simulation techniques. Feedback principles as applied to amplifiers, oscillators, and regulated power supplied.

800:060, 800:061. Calculus I, II
The derivatives and integrals of elementary functions and their applications.

880:130, 880:131. Physics for Science and Eng. I—II
Calculus-based introductory course covering Newtonian mechanics, gravitation, thermal physics, electricity, magnetism, and optics.

Additional elective courses from a selection of Computer Science offerings are required in addition to the core courses listed here. See the course catalog for the full listing of departmental offerings. Complete details of the NaSA major may be found at the UNI Computer Science web site: http://www.cs.uni.edu