Undergraduate Foundation Courses

National Technological University offers many Foundation courses that enable students to prepare for successful graduate study. Foundation courses are 300-level NTU courses that do not carry graduate credit. In cases where students do not have undergraduate degrees that are appropriate preparation for the degrees they seek, they work with NTU to develop a sequence of Foundation courses that will provide them with the necessary background. In other cases, NTU may require some Foundation coursework to help students update their undergraduate technical competence.

General Foundation Areas

MA 320-339	Probability and Statistics (formerly BR 00-09 Mathematics)
MA 340-349	Calculus/Complex Variables/Vector and Matrix Analysis (formerly BR 00-09 Mathematics)
MA 360-369	Algebra (formerly BR 00-09 Mathematics)
MA 380-389	Differential Equations (formerly BR 00-09 Mathematics)
MC 310-319	General Materials (formerly BR 40-49 Materials Science and Engineering and BR 50-59 Mechanical Engineering with the exception of BR 347-Q)
ME 310-319	Mechanics, Dynamics, and Vibrations (formerly BR 00-09 Mathematics)
ME 325	Design (formerly BR 347-Q)

Computer Engineering, Computer Science, and Software Engineering

Applications of computers are pervasive today, affecting the work of most engineers and technical professionals. It is natural, therefore, for people with very diverse technical backgrounds to seek additional education in computing. For that reason, NTU faculty members have precisely identified the undergraduate prerequisites that are the necessary preparation for entering graduate study in computer engineering, computer science, and software engineering. This information is intended to serve as a guide to potential registrants in graduate-level courses, so they can verify that they have the fundamental knowledge that most instructors will expect them to have. NTU does not offer all of these types of courses. For more information about choosing the appropriate courses at local institutions, students should visit the NTU Web site.

AD 310-319	Data Structures (formerly BC 30-39 Data Structures)
CA 310-319	Computer Architecture (formerly BC 60-69 Digital System Design—Computer Architecture)
CA 360-369	Microcomputers and Embedded Computer Systems (formerly BC 40-49 Microprocessors and Assembly Level Programming)
CM 310-319	Mathematical Logic and Automata Theory (formerly BC 80-89 Discrete Structures)
CS 340-349	Operating Systems (formerly BC 50-59 Operating System Principles)
DS 360-369	Digital Hardware Design (formerly BC 20-29 Digital Logic Design)
SE 330-339	Analysis and Design Techniques (formerly BC 10-19 Fundamentals of Computer Engineering)

Electrical Engineering

Admission to the MS in Electrical Engineering program requires a BS degree in electrical engineering. The crucial components of this preparation are the following: two one-semester courses in circuits, one in electronics, one in systems, one in electromagnetics, and one in digital design; plus some proficiency in computer programming.

Applicants seeking the MS in Electrical Engineering who do not have a BSEE degree can prepare themselves by taking the following Foundation courses, by taking equivalent courses at a local institution, or by establishing equivalencies of courses taken in another degree program.

CC 310-319	Communications Systems (formerly BE 40-49 Systems)
CR 310-319	General Circuit Theory (formerly BE 10-19 Circuits)
DS 360-369	Digital Hardware Design (formerly BC 20-29 Digital Logic Design)
EM 340-349	Electromagnetic Field Theory (formerly BE 30-39 Electromagnetics)
IC 320-329	Electronic Devices and Modeling (formerly BE 20-29 Electronics)
PS 330-339	Energy Conversion (formerly BE 50-59 Systems)

Other Foundation Areas

Students may also need to take courses through local colleges, if the coursework they need is not offered by NTU. Advice about Foundation courses is available from NTU advisors. Students are encouraged to work with NTU advisors prior to enrolling in Foundation courses. Other Foundation areas may include:

Chemistry (formerly BR 20-29)
Engineering Science (formerly BR 30-39)
Interfacing and Computer Networks (formerly BC 70-79)
Physics (formerly BR 10-19)
Special Topics (formerly BR 90-99)

Computer Science Fast-Track Certificate Program

NTU offers an accelerated program of undergraduate computer science coursework designed to help students stay on track in their careers. The fast-track program provides focused mini-courses that offer core computer science knowledge to help students transition into computer science or software engineering fields.

Instructors have condensed course materials to specifically meet the needs of students working in high-tech fields. Each course is 1.6 continuing-education credits and is offered for audit or pass/fail only. Course notes are provided, as well as optional homework assignments and exams. A teaching assistant is available via email and phone to answer questions and help with assignments.

Fast-Track Courses

FT 001-NT	Computer Organization
FT 002-NT	Algorithms and Data Structures
FT 003-NT	Computer Programming Languages
FT 004-NT	Foundations of Computer Sciences: Formal Languages and Automata
FT 005-NT	Software Engineering
FT 006-NT	Operating Systems

NTU does not grant academic credit for these courses. Students are not required to take all six mini-courses, but students who complete the six-course series will earn a Certificate of Completion in Principles of Computer Science.