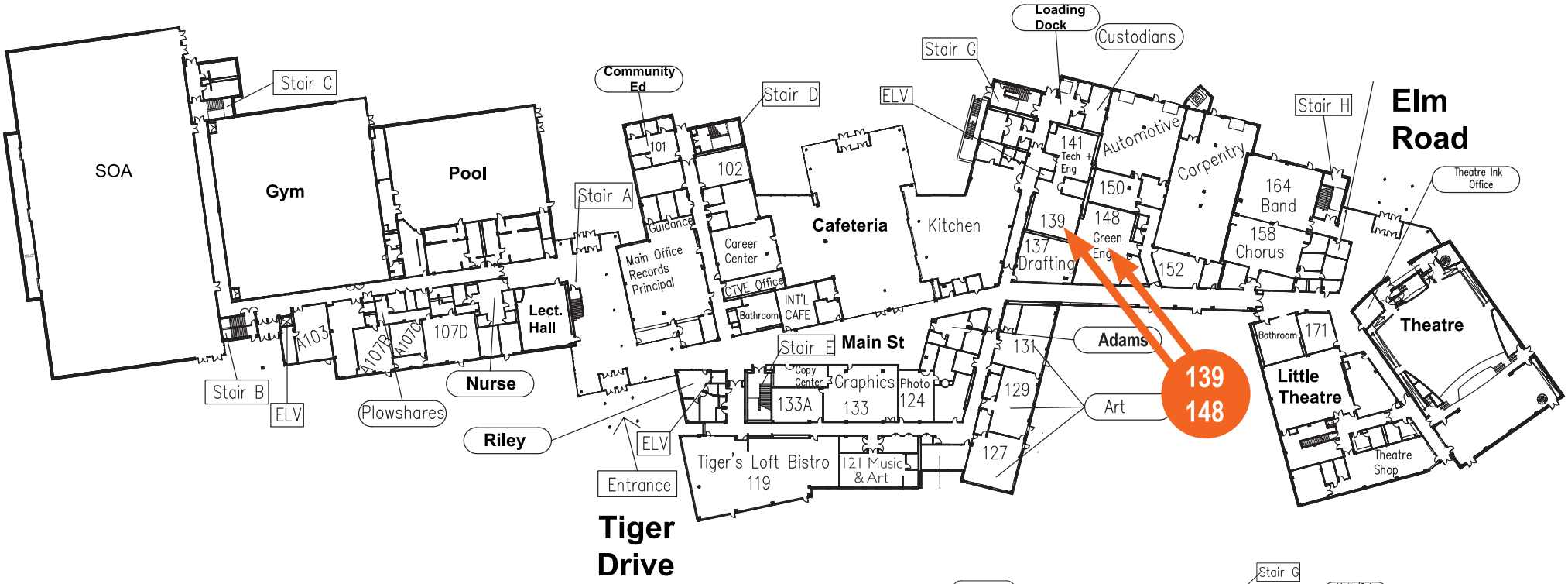
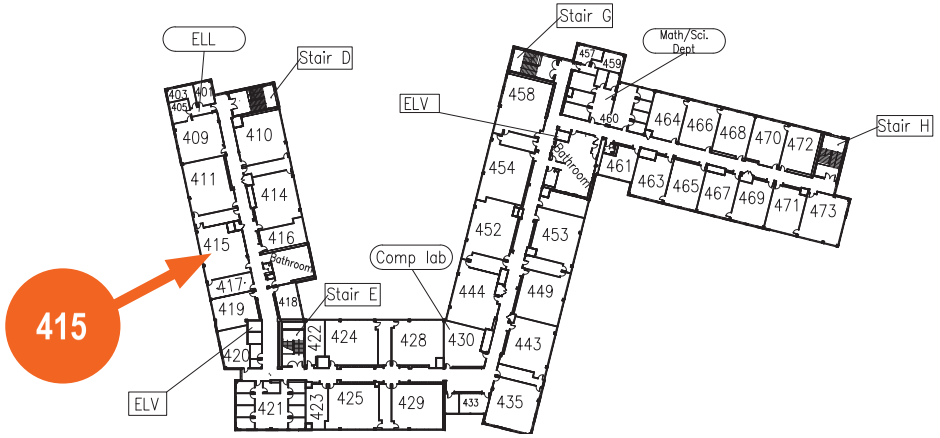
SCIENCE,TECHNOLOGY AND ENGINEERING





PROGRAMS AND LOCATIONS

139 & 148 – Robotics, Engineering

415 – Sustainability, Greenhouse

NEWTON NORTH HIGH SCHOOL
SCIENCE, TECHNOLOGY AND ENGINEERING
OPEN HOUSE

COURSES FOR FRESHMEN

653 INTRODUCTION TO SUSTAINABILITY
NO LEVEL • 9, 10, 11, 12 • Q • 3 CREDITS

This introductory class will largely focus on developing students' awareness about the challenges and solutions in the field of Sustainability, the vocabulary around sustainable development, and globalization. The United Nations Sustainable Development Goals (UN SDGs) will be used as a framework to introduce our students to responsible global citizenship. This course is an excellent preparation for the more advanced Sustainability courses. Students will be introduced to urban agriculture, the circular economy, waste & recycling, sustainable structures, energy solutions, and analyzing students' own personal impact on human health and well-being. Using both the Sustainability lab and the classroom, this course will include guided seminars and hands-on projects.

654 SUSTAINABLE COMMUNITIES
NO LEVEL • 9, 10, 11, 12 • Q • 3 CREDITS

Formerly: Design for Sustainable Communities
This course is designed to introduce students to the principles of environmental design. Students will develop solutions to environmental and/or sustainability challenges at Newton North High School, the City of Newton, and our greater community. Students will be asked to use the design process, starting with empathy and largely focused on the iterative design process. Using both the Sustainability lab and the classroom, this course will include guided seminars and hands-on projects. Students will learn shop / lab safety protocols, and will become familiar with basic sustainable technology.

965 INTRODUCTORY ROBOTICS
NO LEVEL • 9, 10, 11, 12 • Q • 3 CREDITS

Robotics is a hands-on building and demonstration course. In small groups the students design, build and program robots to perform specific tasks. The tasks start simple and progressively get more complicated throughout the course. Some of the topics that will be covered are: Simple machines, Gear and Pulley Systems, Transmission Systems, and Computer Programming. We will be using a multitude of programming languages and controllers.

967 INTERMEDIATE ROBOTICS
NO LEVEL • 9, 10, 11, 12 • Q • 3 CREDITS

Prerequisite: Introductory Robotics is a prerequisite for Intermediate Robotics.
Intermediate Robotics is a completely project based hands-on course where students will work in small teams of 3 or 4. Each team will choose an engineering design problem that requires an automated solution. The student teams will create a custom design to solve these problems. A working prototype will be created by each engineering team by the end of the quarter. Students are encouraged and may choose to participate in Intermediate Robotics for multiple quarters and receive credit for each quarter taken. As each student progresses with their own Robotics skills and knowledge the projects may increase in size and complexity.

963 EXPLORING TECHNOLOGY: DAC
NO LEVEL • 9, 10, 11, 12 • Q • 3 CREDITS

Exploring Technology: Design, Automation, & Communication (DAC) is taught as a hands-on project-based course where the students will learn about the basics of engineering design, automation of machines, and various communication systems. The students will extensively work in cooperative teams to complete hands on projects.

964 EXPLORING TECHNOLOGY: PET
NO LEVEL • 9, 10, 11, 12 • Q • 3 CREDITS

Exploring Technology: Power, Energy, & Transportation (PET) is taught as a hands-on project-based course, similar to Exploring Technology: DAC. Students will learn about Electrical/Power Technology, Mechanical Technology, and Transportation Technology. Through the building and testing of projects, students will learn the concepts behind these technologies as well as skills of working within engineering design teams.

954 ENGINEERING TECHNOLOGY: DCM
NO LEVEL • 9, 10, 11, 12 • SM • 6 CREDITS

In Engineering Technology: Design, Construction, & Manufacturing (DCM), students will learn important technological and engineering related skills and concepts, including an introduction to Engineering Design, Construction Technologies, and Manufacturing Technologies. Students will be designing, building and testing prototype models that cover these concepts. Students will also learn about product design, accurate measurements using a variety of instruments and technologies, application of algebra to engineering problems, and application of physics concepts to real world products.

955 ENGINEERING TECHNOLOGY: SHEL
NO LEVEL • 9, 10, 11, 12 • SM • 6 CREDITS

In Engineering Technology: Sound, Heat, Electricity & Light (SHEL), students will learn important technological and engineering related skills and concepts, including an introduction to Communication Technologies, and Energy and Power Technologies (Fluid, Thermal and Electrical systems). Students will be designing, building and testing prototype models that cover these concepts. Students will also learn about product design, accurate measurements using a variety of instruments and technologies, application of algebra to engineering problems, and application of physics concepts to the real world.

The Newton North High School course catalog is available at NNHS website.
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