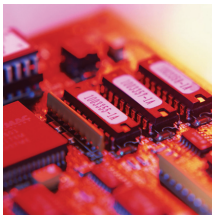
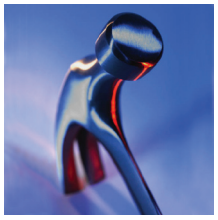
TECHNOLOGY EDUCATION

MIAMI-DADE COUNTY PUBLIC SCHOOLS
giving our students the world

Giving Our Students the World of Technology




TECHNOLOGY EDUCATION

Middle school technology education courses provide students with career exploration, as well as introductory technological skills through hands-on activities.

Senior high school technology education programs are designed to provide students with in-depth career preparation. The goal of each technology education program is to prepare students for further education in college, in advanced career and technical education programs, or in other postsecondary schools, as well as to provide occupational technological skills.

For further information, visit our website:
http://teched.dadeschools.net

Technology Education Programs of Study

- **Aerospace Technologies**
- **Communications Technology**
- **Construction Technology**
- **Drafting/Illustrative Design Technology**
- **Electronics Technology**
- **Engineering Technology**
- **Materials & Processes Technology**
- **Power & Energy Technology**
- **Production Technology**
- **Technology Studies**
- **Transportation Technology**

FLORIDA VOCATIONAL GOLD SEAL SCHOLARS AWARD

Senior High Technology Education students enrolled in any of the three-credit technology education programs have the opportunity to qualify for the **Florida Vocational Gold Seal Scholars Award**.

The award provides up to 75% of the average state tuition and fees at a Florida postsecondary school for up to four years.

Eligibility requirements:

1. Complete at least three secondary school career and technical education credits in a sequential program/strand of study (excluding OJT)
2. Earn a 3.5 GPA in the career and technical education program
3. Earn a 3.0 overall unweighted GPA
4. Receive a passing grade on the College Placement Test or its equivalent (SAT/ACT)

MIDDLE SCHOOL TECHNOLOGY EDUCATION

Technology Education middle school students engage in a variety of career exploration activities and projects using industry standard technology equipment and software. Projects and activities include graphic design T-shirts, robot cars, CO_2 dragster car, rocketry, flight simulation, bridge and structural construction, digital photography, and many more.

While experiencing a taste of these potential career areas, students are also preparing for senior high technology education programs. Upon entering senior high, middle school students will be able to make informed decisions concerning high school majors and career academies.

Middle school students have the opportunity to enter competitions in the Miami-Dade County Fair & Exhibitions, as well as state and national competitions and leadership conferences as a member of the Technology Student Association.

Middle School District Course Numbers

- M/J Exploratory Career Wheel 1 800020015
- Introduction to Technology 860001001
- Exploring Technology 860002012
- Exploration of Communications Technology 860003001
- Exploration of Production Technology 860004001
- Exploration of Aerospace Technology 860005001
- Exploration of Power & Energy Technology 860025002
- Exploration of Transportation Technology 860024002

ACADEMY OF ARCHITECTURE & CONSTRUCTION

Construction Technology

District Course Numbers and Sequence:

860071001 Construction Technology 1
860072001 Construction Technology 2
860073001 Construction Technology 3 *

Fourth year course:

860190001 Advanced Technology Applications*

** Honors Credit*

Career Opportunities

- Construction Project Manager
- Residential Contractor
- Land Developer
- Master Carpenter
- Master Electrician
- Architectural Engineer
- Building Maintenance Supervisor

CONSTRUCTION TECHNOLOGY

This program of study builds a knowledge base in all phases of modern construction. Sample course topics can range from site planning for a single-family residence to engineering aspects of civil construction. Technical skills are emphasized to develop a wide range of aptitudes and interests. Student learning activities include reading and interpreting blueprint drawings, hands-on carpentry projects, installing utilities, and using computer applications related to the construction industry.

This program of study feeds into a wide range of career options in the architecture and construction career clusters. Career opportunities in construction technology may be found in residential development, commercial building construction, public utilities, architectural design, and construction skilled trades.

MATERIALS & PROCESSES TECHNOLOGY

This program introduces the participant to modern materials and the various processes for manipulating and converting these materials into useful products. The primary materials used are wood, metal, and plastic.

Focus is on modern industry practices, with computer applications such as computer numeric controlled programming (CNC). Materials testing and production planning are also integral parts of the program.

Career Opportunities

- Building Contractor
- Industrial Engineer
- Carpenter
- Project Manager

This program of study can be found in the **ACADEMY OF MANUFACTURING TECHNOLOGY** or the **ACADEMY OF ARCHITECTURE & CONSTRUCTION**

Materials and Processes Technology

District Course Numbers and Sequence

860111001 Materials and Processes Technology 1
860112001 Materials and Processes Technology 2
860113001 Materials and Processes Technology 3 *

Fourth year course:

860190001 Advanced Technology Applications*

** Honors Credit*

ACADEMY OF MANUFACTURING TECHNOLOGY

Production Technology

District Course Numbers and Sequence:

860054001 Production Technology 1
860064001 Production Technology 2
860174001 Production Technology 3 *

Fourth Year Course:

860190001 Adv. Technology Applications *

**Honors Credit*

Career Opportunities

- CNC Programmer
- Automated Systems Engineer
- Production Manager
- Industrial Designer

PRODUCTION TECHNOLOGY

This relatively new curriculum shares elements with several traditional courses of study, with an emphasis on state-of-the-art technology. Initially, the student will explore processes related to industrial materials and composites.

Custom-made, as well as, mass-produced projects are course outcomes. As the program progresses, computer-aided manufacturing (CAM), computer numeric control (CNC), and computer-integrated manufacturing (CIM) work cells are integrated into classroom activities. Design and engineering of various construction projects are the primary emphasis in year three and four of this comprehensive training.

Construction Technology • Materials & Processes Technology • Production Technology

COMMUNICATIONS TECHNOLOGY

This program builds on a foundation of the vast area of Communications Technology with an emphasis on graphic arts communications, which includes graphic design, vinyl sign technology, digital photography, offset digital and silk screen printing production methods.

State-of-the-art technology equipment and graphic design software, such as, Adobe® Creative Suite Photoshop®, InDesign®, and Illustrator® are used to teach design and production techniques currently used in industry. Dreamweaver web design software allows students to go beyond two-dimensional graphics and venture into areas such as web animation and digital video production.

Career opportunities within this field range from very creative in the areas of film, TV, radio, newspaper, internet, etc. to careers involving technical skills in offset printing, digital prepress, telecommunications, fiber optics, satellite communications, etc.

Career Opportunities

- Graphic Designer
- Web Animation Artist
- TV Camera Operator
- Telecommunications Technician
- Photojournalist
- Offset Production Manager
- Film Editor
- Prepress Technician
- Offset Press Operator
- Photojournalist
- Magazine Art Director

ACADEMY OF COMMUNICATIONS ARTS & DIGITAL MEDIA

Communications Technology

District Course Numbers and Sequence:

860101013 Communications Technology 1
860102023 Communications Technology 2
860103033 Communications Technology 3*

Fourth year course:

860190001 Advanced Technology Applications*

** Honors Credit*

Students produce projects such as silk screen printed T-shirts, mouse pads, vinyl lettered signs, graphic design of brochures, posters, etc.

DRAFTING/ILLUSTRATIVE DESIGN TECHNOLOGY

This program provides students with a foundation of technically oriented experiences in the study of drafting, computer aided drafting (CAD), and design technology. The drafting laboratories are equipped with the latest state-of-the-art digital design hardware and AutoCAD software capable of the highest industry standard CAD and design solutions. Through hands-on activities students build on a foundation of basic drafting skills advancing to drafting accomplishments, such as, three dimensional computer modeling. Students hone their drafting and illustrative design career skills in the fields of architecture, construction, engineering, and manufacturing.

This program may be taught with an emphasis on one of these career clusters making it an appropriate program for the Academy of Architecture and Construction, the Academy of Engineering, or the Academy of Manufacturing.

ACADEMY OF ARCHITECTURE & CONSTRUCTION

Drafting/Illustrative Design Technology

District Course Numbers and Sequence

860081001 Drafting/Illustrative Design Technology 1
860082001 Drafting/Illustrative Design Technology 2
860083001 Drafting/Illustrative Design Technology 3 *

Fourth year course:

860190001 Advanced Technology Applications

** Honors Credit*

This program of study may also be found in the

ACADEMY OF ENGINEERING

or the

ACADEMY OF MANUFACTURING

Career Opportunities

- Residential Architect
- Commercial Architect
- Civil Engineer
- Industrial Designer
- Furniture Designer
- Mechanical Engineer
- Industrial Illustrator
- Landscape Architect

Communications Technology • Drafting/Illustrative Design Technology

AEROSPACE TECHNOLOGIES

Career Opportunities
- Commercial Airline Pilot
- Avionics Technician
- Air Traffic Controller
- Aeronautical Engineer
- Aircraft Structural Designer
- Flight Engineer
- Safety Inspector

ACADEMY OF AEROSPACE/AVIATION

Aerospace Technologies

District Course Numbers and Sequence:

860058001 Aerospace Technologies 1
860068001 Aerospace Technologies 2
860178001 Aerospace Technologies 3*

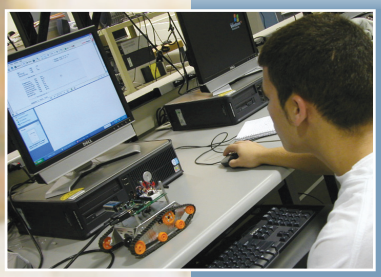
Fourth Year Course:

860190001 Advanced Technology Applications *

**Honors Credit*

This "high-tech" field slices across several other areas of study; however, its emphasis is definitely in the sky and space beyond. The program includes the study of aviation, principles of aeronautics, power and propulsion systems, computer-aided drafting (CAD), and robotics. Studying space travel and man's ability to live in space is an integral part of these courses. In their third and fourth year of study, students research and design aerospace technology projects.

Flight simulation software and robotics projects are used to give students an understanding of the technological challenges of the aviation and aerospace industry.



Student at George T. Baker Aviation working on computer programming robot for Miami-Dade County Fair Robotics Challenge. Robotics is an integral part of aviation and aerospace engineering.

POWER & ENERGY TECHNOLOGY

Power and Energy Technology are the building blocks for the social and economic future of our society. Students study emerging technologies in these fields through hands-on experiences with hydraulic, pneumatic, electric, and solar power technology.

Students design and construct projects, such as solar powered vehicles and wind turbines.

ACADEMY OF TRANSPORTATION

Power and Energy Technology

District Course Numbers and Sequence

860131002 Power and Energy Technology 1
860132001 Power and Energy Technology 2
860133002 Power and Energy Technology 3*

Fourth year course:

860190001 Advanced Technology Applications*

**Honors Credit*

Career Opportunities
- Transportation Engineer
- Rail Systems Designer
- Automotive Service
- Master Mechanic
- Power Plant Operator

TRANSPORTATION TECHNOLOGY

Transportation technology is a varied and fast-changing program. Traditional skills related to steam, diesel, and internal combustion powered transportation are a core part of the curriculum.

Components dealing with hydraulic, pneumatic, electric, jet, rocket, and solar technology are all explored in detail. Systems relationship, efficiency, and research help to complete this well-rounded program.

Career Opportunities
- Transportation Engineer
- Automotive Service Manager
- Mass Transit Project Manager
- Automotive Master Mechanic
- Marine Mechanic
- Marine Electronics Technician

ACADEMY OF TRANSPORTATION

Transportation Technology

District Course Numbers and Sequence:

860121013 Transportation Technology 1
860122023 Transportation Technology 2
860123033 Transportation Technology 3 *

Fourth Year Course:

860190001 Advanced Technology Applications *

**Honors Credit*

Aerospace Technologies • Power & Energy Technology • Transportation Technology

ENGINEERING TECHNOLOGY

ACADEMY OF ENGINEERING

Career Opportunities

- Civil Engineer
- Electrical Engineer
- Mechanical Engineer
- Structural Engineer
- Robotics & Automation Engineer

Engineering Technology

District Course Numbers and Sequence

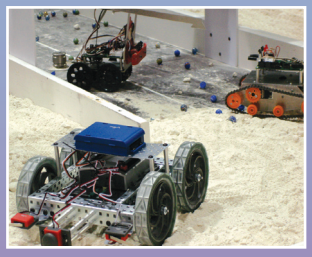
860057001 Engineering Technology 1
860067001 Engineering Technology 2
860067002 Engineering Technology 2 **
860177001 Engineering Technology 3*

Fourth Year Course

860190001 Adv. Technology Applications *

** Honors Credit* ***District Honors*

Engineering Technology introduces the student to the principles of various engineering systems, including fluid, thermal, electronic, electrical, and mechanical utilizing hands-on applications. Students learn to communicate solutions to engineering problems graphically using industry standard software programs such as Solidworks, AutoCAD, and Inventor.



Students have many opportunities to compete in team and individual robotics and engineering challenges in competitions such as *US First Robotics Challenge,* and the *Miami-Dade County Fair & Exhibitions Robotics Challenge.*

Engineering technology students use a variety of tools and machines, such as computer numeric controlled (CNC) mills and lathes, to solve design problems. Original research in the area of engineering is also included at the higher levels of study.

ELECTRONICS TECHNOLOGY

Although available at a limited number of schools, this program gives the 21st century student a technical foundation for the electronics industry.

Understanding engineering and electronic technology systems and their interrelationships is an important part of the program.

ACADEMY OF ENGINEERING

Electronics Technology

District Course Numbers and Sequence

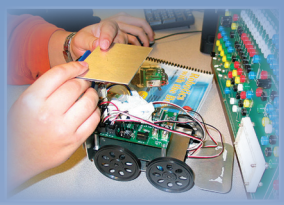
860091013 Electronics Technology 1
860092023 Electronics Technology 2
860093033 Electronics Technology 3*

Fourth Year Course

860190001 Adv. Technology Applications*

** Honors Credit*

TECHNOLOGY STUDIES



This program of study uses a problem-solving approach to explore skills in a variety of modern technologies from Communications Technology to Engineering. Students completing Technology Studies will become technologically literate by learning the concepts and role that engineering, design, invention, and innovation have in creating technology systems that help make life easier and better.

Students become familiar with various areas of technology, such as, robotics, computer numeric control (CNC) programming and production, computer aided drafting (CAD), lasers, fiber optics, etc.

Because of the range of the technology studied in this program, Technology Studies is a program of study in the academies listed below. For a list of career opportunities, see the other program areas in these academies.

ACADEMIES OF:

AVIATION & AEROSPACE
ENGINEERING
COMMUNICATION ARTS & DIGITAL MEDIA
MANUFACTURING TECHNOLOGY

Technology Studies

District Course Numbers and Sequence:

860051001 Technology Studies 1
860061001 Technology Studies 2
860171001 Technology Studies 3*

Fourth Year Course:

860190001 Adv. Technology Applications*

**Honors Credit*

TECHNOLOGY STUDENT ASSOCIATION

Miami-Dade County middle school and senior high school technology education students participate in Technology Student Association (TSA) activities at the school, district, state and national levels.

At TSA state and national competitions, you'll see students involved in operating joy sticks in cyberspace pursuits, slamming buzzers answering questions in the technology bowl, bending over computers doing AutoCAD, racing cars and robots, while other students focus in on their achievements with video cameras for the video editing competition. Recently technology education students from Miami-Dade County schools won awards in 30 categories at the state TSA conference.

The school chapters enter team and individual competitions at:

- Miami-Dade County Fair & Exhibitions
- FL-TSA State Leadership Conference, and
- TSA National Leadership Conference

For more information regarding the exciting world of Technology Student Association activities, visit **www.tsaweb.org** and **www.floridatsa.com.**

The Florida Technology Student Association (FL-TSA) is the appropriate Career and Technical Education Student Organization for providing leadership training experiences and reinforcing specific career skills. FL-TSA activities shall be an integral part of technology education programs and are defined as part of the curriculum in accordance with Rule 6A-6.065, FAC.

Electronics Technology • Engineering Technology • Technology Studies

M-DCPS Career Academies

Technology Education programs of study and the Florida Department of Education program number:

Academy of Architecture and Construction
- Construction Technology 8600700
- Drafting/Illustrative Design Technology 8600800*
- Materials and Processes Technology 8601100

Academy of Communication Arts & Digital Media
- Communication Technology 8601000
- Technology Studies 8600100*

Academy of Manufacturing Technology
- Materials and Processes Technology 8601100
- Production Technology 8604000
- Technology Studies 8600100*
- Drafting/Illustrative Design Technology 8600800*

Academy of Engineering
- Electronics Technology 8600900
- Engineering Technology 8607000
- Production Technology 8604000
- Technology Studies 8600100*
- Drafting/Illustrative Design Technology 8600800*

Academy of Automotive Industries
- Power and Energy Technology 8601300
- Transportation Technology 8601200

Academy of Aviation and Aerospace
- Aerospace Technologies 8600080
- Power and Energy Technology 8601300
- Technology Studies 8600100*

***Additional course for all programs*:**

Work-Based Experience

District Course Number: 860180015
This course gives students internship experience and may be taken only after at least one credit of a Technology Education three credit program is completed.

** Both the Drafting/Illustrative Design Technology and Technology Studies programs may have instructional emphasis of various career areas and are appropriate programs of study for several career academies.*

Students with Disabilities

Miami-Dade County Students With Disabilities (SWD) are usually mainstreamed into Technology Education programs in middle and senior high school. Students needing more individualized instruction are enrolled in SWD Technology Education courses taught by program certified teachers in technology education labs. The senior high courses listed below may be used as stand alone courses or within career academies.

SWD Middle School Courses (Grades 6-8)
788001009 Exploration of Power & Energy Technology
788001010 Exploring Communications Technology
788001011 Exploring Technology

SWD Senior High School Courses (Grades 9-12)
798019001 Construction Technology
798019002 Power & Energy Technology
798019003 Drafting & Illustrative Design Technology
798019004 Materials & Processes Technology
798019005 Communications Technology
798019006 Transportation Technology
798019009 Production Technology
798019010 Technology Studies

The School Board of Miami-Dade County, Florida, adheres to a policy of nondiscrimi-natiion in educational programs, activities, and employment and strives affirmatively to provide equal opportunity for all.

TECHNOLOGY EDUCATION
Division of Career & Technical Education

Tom Cummings
Instructional Supervisor, Technology Education
305-995-1882

Pamela B. Lopez
Educational Specialist, Technology Education
305-995-7301

1450 N.E. 2nd Avenue, Room 815 • Miami, FL 33132

Visit our web site at http://teched.dadeschools.net