Wentworth
INSTITUTE OF TECHNOLOGY

TECHNICAL COMPETENCIES AND PROFESSIONAL SKILLS

Applied Mathematics
Technical Skills: data visualization and analysis, SQL, finance and accounting
Programming Languages: R, MATLAB, C++, Java, Python
Markup Languages: LaTeX, HTML, CSS
Software: Microsoft Office (Excel, Office, Word), XCode, Visual Studio
Note: Skills, software, and languages are dependent on elective taken, computer selection, and class year.

Applied Sciences
Instrumentation: UV/Vis spectroscopy, NMR spectroscopy, IR spectroscopy, GC-MS, LC-MS, thermocycler, nucleic acid sequencer, microplate reader, cryocooler
Lab Techniques: Gel electrophoresis and SDS-PAGE, Western blotting, primer design and Polymerase Chain Reaction (PCR), QPCR, sterile lab technique, cell culture, nucleic acid isolation and purification, protein isolation and purification (chromatography, centrifugation, dialysis), enzyme thermodynamics and kinetics, transfection and transformation, chemical synthesis and purification (distillation, extraction, chromatography, rotary evaporator, crystallization), inert atmosphere and Schlenk line techniques, titration, dissection of preserved specimens, four-probe electrical measurement, Bragg diffraction
Competencies: Application of the scientific method, Scientific writing and oral communication
Software and computational skills: Microsoft Office (Word, Excel, Powerpoint), ChemDraw, PyMol, TopSpin, Java, Protein DataBank (PDB), NCBI suite (including BLAST, GenBank), Orca Quantum Chemistry software, LoggerPro, LabView

Architecture
Design Skills: Multi-scale civic and institutional projects (educational facilities, museums, theaters, libraries, etc.), mixed use projects, multi-unit housing and urban design.
Building Technology and Systems Knowledge: Building materials and assemblies, structures, environmental systems, sustainable design, site planning and landscape and contract documents
Digital Skills: 2D drawing & 3D modeling using AutoCAD, Revit, Rhino 3D, ArchiCAD, Sketchup. Rendering using Maxwell, V-Ray and Artlantis. Image editing and formatting using Photoshop, InDesign, Illustrator. Daylighting and energy analysis using Ecotect

Biological Engineering
Technical Skills: Nucleic Acid isolation and purification, protein and nucleic acid electrophoresis, protein biochemistry, cell culture, husbandry and culture of model organisms, western blotting, primer design & Polymerase Chain Reaction (standard and RT), process control, bioreactor operation, mass transfer principles, genetic cloning, transfection and transformation, enzyme thermodynamics and kinetics.
Software Skills: Excel, MATLAB.
Soft Skills: Scientific writing and oral communication.
Design Skills: Application of the scientific method to design experiments and conduct research projects; application of engineering design principles to approach engineering problems.

Biomedical Engineering
Technical Skills: Analog and digital circuits, breadboard/data acquisition board
Software: MATLAB, LabVIEW, Multisim, C++, SolidWorks, AutoCAD, Microsoft Office, Google Apps
Test Instruments & Devices: Oscilloscope, function generator, multimeter, power supply, TI MSP430 microcontroller, strain gauge
Medical Devices: Vernier sensors, including EMG, EKG/ECG, pulse oximeter, blood pressure cuff

coopsandcareers.wit.edu
550 Huntington Ave, Boston, MA 02115
coopsandcareers@wit.edu | 617.989.4101

Wentworth
INSTITUTE OF TECHNOLOGY

Business Management
Technical Skills: Access, MS Project, Microsoft Office (Word, Excel, PowerPoint), decision tools, systems analysis and design
Professional Skills: Email etiquette, communication skills, team processes, leadership, negotiations, managing projects, analytical decision making, operations

Civil Engineering, Civil Engineering Technology
Design: AutoCAD, AutoCAD Civil 3D, RISA 2D
Field: Total station, theodolite, automatic level
Microsoft: Microsoft Office (Excel, Word, PowerPoint)

Computer Science
Programming Languages: Java, C, C++, SQL, Assembly, R
Software: Visual Studio, Eclipse, MySQL, Oracle, VirtualBox, Office
Operating Systems: Windows, Linux
Note: Every student would add to the lists based on the electives they've taken

Computer Networking
Operating Systems: Linux, Windows, Windows Server, Kali
Software: Cisco IOS, VMware Workstation, VirtualBox, Wireshark
Oracle Programming Languages: Java, Shell, SQL, HTML, JavaScript, PHP
Note: Every student would add to the lists based on the electives they've taken

Computer Engineering, Computer Engineering Technology
Technical Skills: Analog and digital circuit design, building and testing, reading schematics, software development and testing, debugging of software, hardware, and interface
Operating Systems: Windows, Linux/Unix
Software: AutoCAD, PSpice, Agilent VEE, LabVIEW, Quartus II, Multisim, Microsoft Office (Excel, Word, PowerPoint), Wireshark, Eclipse, Cadence, Visual Studio
Programming Languages: C, C++, Verilog, VHDL, MATLAB, Assembly, HTML5, Python, SQL
Test Instruments: Oscilloscope, function generator, digital multimeter, power supply, Waveform Generator Breadboard
Devices: Nios II soft microprocessor, Texas Instrument MSP430, FPGA Altera's Cyclone II, BJT's, OP-Amps (741), TTL, CMOS, Arduino

Computer Information Systems
Technical Skills: Word, Excel, Access, MS Project, programming, decision tools, systems analysis and design
Professional Skills: Email etiquette, communication skills, team processes, leadership, analytical decision making, operations

Construction Management
Technical Skills: Sage Timber line, and Microsoft Project
Management: Primavera P6, Prolog, On-Center
Design: AutoCAD, Revit
Field: Total station, theodolite, automatic level
Microsoft: Word, Excel, PowerPoint

Cybersecurity
Network Software: Cisco Packet Tracer, Nmap, Maltego, SGLite Browser, Wireshark, Network Miner
Forensic & Security Software: Microsoft Baseline Security Analyzer, Cain, Lophtcrack, Autopsy, Volatility
Programming Languages: Java, C, C++, SQL, Bash Scripting
Software: Visual Studio, Eclipse, REDCap, Adobe Creative Suite
Hardware: Workstations, servers, desktops, KVM's, Raspberry Pi, Network hardware
Operating Systems: Ubuntu/Debian/CentOS/Arch Linux, Windows 8/10, MacOS

Wentworth
INSTITUTE OF TECHNOLOGY

Electrical Engineering, Electronic Engineering Technology
Technical Skills: Analog and digital circuit design, building and testing, reading schematics, electric machines and transformers, 3-phase systems, power factor correction
Operating Systems: Windows XP, Windows 8
Software: AutoCAD, PSpice, Agilent VEE, LabVIEW, Quartus II, Multisim, Cadence, Microsoft Office (Word, Excel, PowerPoint)
Programming Languages: C, C++, VHDL, MATLAB
Test Instruments: Oscilloscope, function generator, digital multimeter, power supply
Devices: Texas Instrument MSP430, FPGA Altera's Cyclone II, TTL, CMOS, operational amplifiers

Electromechanical Engineering
Technical Skills: Machining, CNC operation, strength testing, casting, welding, analog and digital circuit design Texas Instrument MSP430, FPGA Altera's Cyclone II,
Design: AutoCAD, SolidWorks, Mechanical Desktop, technical drawings
Software: MATLAB, Simulink, Working Model (2-D), PSpice, Agilent VEE, LabVIEW, Quartus II, Multisim, Microsoft Office (Excel, Word, PowerPoint)
Programming Languages: C, C++, VHDL
Test Instruments: Oscilloscope, function generator, digital multimeter, power supply, micrometer, dial bore gauge, Arduino

Facility Planning and Management
Technical Skills: building structure, environmental systems, construction documentation, lighting, building regulations, project management, energy management, building assessment
Software: AutoCAD, Revit, InDesign, Illustrator, Photoshop, Google Sketchup, Microsoft Office (Word, Excel, PowerPoint), Microsoft Project
Management Skills: Presentation skills, project development, financial analysis, benchmarking

Industrial Design
Design: Ideation, sketching/rendering, 3D visualization, Design Research, information architecture
Technical: Woodworking (turning, joining, laminating, fabrication), machining metal (lathes, mills), Plastics (machining, cutting, forming, casting), 3D Printing
Software: SolidWorks, Rhino 3D, KeyShot, Adobe Design Suite CC (Photoshop, Illustrator, InDesign), Sketchbook Pro, Microsoft Office
Model Making: Blue foam shaping, wood and RenShape modeling, vacuum forming, plastic forming and bending, mold making/resin casting, rapid prototyping

Interdisciplinary Engineering: *See major concentration for more details.*

Interior Design
Design Project Types: Retail, hospitality, residential, corporate
Technical Knowledge: Building structure, materials selection and specification, environmental systems, furniture selection and specification, construction documentation, lighting, building regulations, sustainability
Digital Skills: AutoCAD, Sketchup, Podium, Revit, Photoshop, Illustrator, InDesign, Microsoft Office (Word, PowerPoint, Excel)

Mechanical Engineering, Mechanical Engineering Technology
Engineering: Materials testing, flow devices, strain gauges, welding, casting, Tinius Olsen impact tester, FEA, Engineering Graphics, Machine Design, Thermal Analysis, Materials testing with Instron Equipment, Simulation Based Design, Finite Element Analysis (FEA)
Software: BASIC Programming, C++, SolidWorks, SolidWorks Simulation FEA, Mechanical Graphics, AutoCAD, Mechanical Desktop 6, Working Model 2D, MATLAB, Microsoft Office (Word, Excel, Outlook, Access, PowerPoint)
Manufacturing: CAMWorks, G programming language (G-code), Document management systems (Agile), enterprise resource planning (Chess), manufacturing execution systems (DataSweep MES), CNC milling on 3 axes.