
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.

Architecture

Design: Small- to mid-scale civic and institutional projects (educational facilities, museums, theaters, libraries, etc.), mixed use projects, multi-unit housing, urban and community design

Building Technology: Materials and assemblies, structures, environmental systems, sustainable design, site planning and landscape, contract documents

Digital Skills: Design, presentation and technical drawing; 2D & 3D modeling;

Software: AutoCAD, Revit, Rhino 3D, Photoshop, InDesign, Illustrator, Ecotect, SketchUp, FormZ

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

Business Management

Technical Skills: Access, MS Project, Microsoft Office (Word, Excel, PowerPoint)

Professional Skills: Email etiquette, communication skills, team processes, leadership, negotiations

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: C, C++, C#, Java, SQL, PHP, Assembly, JavaScript, HTML, CSS

Operating Systems: Windows XP, Windows 8, Linux, Unix, Mac OS X

Software: Visual Studio, Eclipse, .NET, Microsoft Office (Excel, Word, PowerPoint), Multisim, PSpice, Dreamweaver, Firework, Adobe Flash

Programming Languages: Python, Perl

Computer Networking

Operating Systems: Unix, Linux, Microsoft Window Server

Programming Languages: C++, Java, shell, JavaScript, PHP, SQL

Software: IOS, VMware, Wireshark, Oracle

Hardware: Cisco routers and switches, VoIP

Computer Engineering, Computer Engineering Technology

Technical Skills: Analog and digital circuit design, building and testing, reading schematics, software development and testing

Operating Systems: Windows XP, Windows 8, Linux/Unix

Software: AutoCAD, PSpice, Agilent VEE, LabVIEW, Quartus II, Multisim, Microsoft Office (Excel, Word, PowerPoint), Wireshark, Eclipse

Programming Languages: C, C++, VHDL, MATLAB, JavaScript, Objective #C, Assembly, HTML5

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

Professional Skills: Email etiquette, communication skills, team processes, leadership

Construction Management

Management: Timberline, Primavera P6, Prolog, On-Center

Design: AutoCAD, Revit

Field: Total station, theodolite, automatic level

Microsoft: Word, Excel, PowerPoint

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, Microsoft Office

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, technical drawing, photography, information architecture

Technical: Woodworking (turning, joining, laminating, fabrication), metals (lathes, mills, forging, silver-smithing), ceramics (throwing, hand molding, slip-casting), leatherwork, porcupine quill-working, horn scrimshaw, split wood basketry, knots/lashings

Software: Rhino, Flamingo, Keyshot, Adobe Design Suite CS5, Sketchbook Pro, AutoCAD, Ashler -Vellum Graphite, Microsoft Office

Model Making: Blue foam shaping, reshape modeling, vacuum forming, foam core, acrylic bending, mold making/resin casting, rapid prototyping, chipboard/bristol board

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

Digital Skills: Vectorworks, 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

Software: BASIC Programming, C++, SolidWorks, Mechanical Graphics, AutoCAD, Mechanical Desktop 6, Working Model 2D, 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.