ECE229 Software-Fall 2003

Updates to this release:

- **Embedded C Programming and the Atmel AVR ver. 1.23.8d Evaluation installed.** The version that comes with the book is 1.23.2 and does not work on Windows XP without administrative privileges. Downloaded from: [http://www.dontronics.com/cvavr_download.html](http://www.dontronics.com/cvavr_download.html)

- **Microsoft XP Professional** (operating system)

- **Adobe Acrobat Reader** (freeware)

- **Agilent Technologies**
  - Agilent IntuiLink for the 54600-Series Oscilloscopes, ver. 3.0
  - Agilent IntuiLink for 34401A and 34420A Multimeters, ver. 1.0
  - Agilent IntuiLink for the 33250A and 33120A Waveform Generators, ver. 1.1

  - **Mechanical**
    ANSYS Mechanical includes a full complement of nonlinear and linear elements, material laws ranging from metal to rubber, and the most comprehensive set of solvers* available. It can handle even the most complex assemblies—especially those involving nonlinear contact—and is the ideal choice for determining stresses, temperatures, displacements and contact pressure distributions on all your component and assembly designs.

- **Atmel CD-ROM Data Books** Release-November 2002
  Application Specific Standard Products, Nonvolatile Memory, Programmable Logic and System-Level IC’s, Microcontrollers.

- **Borland Turbo C++** *(1998 vintage)*

- **Cadence 14.2** *(network floating license - expires Sept. 30, 2003)*
  - **ALLEGRO**
    High-speed PCB layout, routing, and manufacturing output. Allegro® is the world's leading PCB layout system, comprising the industry's first true physical and electrical constraint-driven PCB layout tool. It forms the core of the Cadence PCB Design Expert and PCB Design Studio suites, which provide fully interactive environments for creating and editing complex and/or high-speed, multi-layer printed circuit boards. Allegro addresses varied performance criteria, as well as a wide range of design, testability, and manufacturability concerns. Its flexibility, design capacity and depth of technology features further combine to make Allegro the tool of choice for PCB design professionals.
- **CAPTURE CIS**
  Powerful schematic capture and component management system. Capture CIS is an advanced version of OrCAD Capture® schematic entry allowing teams to share and reuse centralized parts information. With its comprehensive design capture and management environment, including built-in component information management capabilities, Capture CIS streamlines the front-end design process by reducing the amount of time needed to research and manually enter parts data.

- **CONCEPT HDL**
  Advanced schematic entry and part selection capabilities. Concept® HDL streamlines the high-speed design process by merging schematic design with PCB design. It combines schematic design entry capabilities with extensive simulation and board layout solutions, and serves as the "productivity hub" for all CAE-required tasks associated with system design flow. Within PCB Design Expert, Concept HDL easily integrates with Constraint Manager to assist in the high-speed design process. It also works seamlessly with NC-Verilog® digital and NC-VHDL for HDL-based verification solutions and PSpice® simulator for analog simulations.

- **ORCAD CAPTURE**
  World-famous design entry solution. With its fast, universal design entry capabilities, OrCAD Capture® schematic entry has quickly become the world’s favorite design entry tool. From designing a new analog circuit, revising schematic diagrams on an existing PCB, or drafting a block diagram of HDL modules, OrCAD Capture provides everything you need to complete and verify your designs quickly.

- **ORCAD LAYOUT**
  Powerful PCB design environments. OrCAD Layout® place and route editor is one of the most popular PCB design tools used today. From single-sided boards to complex, multi-layer designs - OrCAD Layout delivers a multitude of fully scalable solutions. Tightly integrated with schematic packages OrCAD Capture® design entry and Capture CIS, and now with SPECCTRA® autorouter, this powerful tool is everything you need to get the job done quickly and in the most efficient way possible.

- **PSPICE**
  The industry standard for analog and mixed-signal simulation. PSpice® simulator is a full-featured analog and mixed-signal simulator supporting everything from high-frequency systems to low-power IC designs. Advanced features enable “what if” analyses, allowing engineers to explore various design configurations before committing to final implementation. The powerful and robust simulation engine of PSpice integrates easily with OrCAD Capture® design entry and Concept® HDL schematic capture. It allows engineers to create designs, control simulations, and interpret the results in a single environment.

- **SPECCTRA**
  Intelligent autorouting of high-speed, high-density PCB systems. SPECCTRA® is the market-leading technology for automatic and interactive interconnect routing for PCBs and complex IC packages. This advanced autorouting tool constitutes a key component of several Cadence products and suites for high-speed PCB design and IC packaging, while also providing excellent interoperability with most other EDA industry layout tools. Specifically designed to handle high-density, highly constrained, high-speed printed circuit boards that require complex design rules and adherence, SPECCTRA employs powerful shape-based algorithms to make maximal use of the routing area while meeting the most stringent design constraints.

- **SPECCTRAQUEST**
  Complete design and analysis environment for high-speed digital systems. The Cadence SPECCTRAQuest™ family of products offers an integrated high-speed
design and analysis environment for engineers creating digital PCB systems and IC package designs. SPECCTRAQuest SI Expert for example, allows users to explore and resolve electrical performance-related issues in all stages of the design cycle. By exploring and making trade-offs between timing, signal integrity, crosstalk, power delivery, and EMI, designers can optimize electrical performance and reliability before committing to the final design for manufacture. SPECCTRAQuest analysis can be performed at the board, multi-board, or across multiple system design configurations.

- **Circuit Works ver. 00.1.03** *(network install and executed. See Dr. Ciletti)*

- **Cyberclass**
The CyberClass client software allows you to get the most out of your CyberClass account, and while you can log into your account using a web browser (say, to check your email while you're away from your regular computer), you won't have near the same speed, reliability, or feature set that you do with CyberClass client software.

- **Electronics Workbench** *(Network install and executed – 37 concurrent users)*
  Multisim 7 is a powerful simulation tool that allows you verify circuits and correct errors before they become costly mistakes. It is by far the world’s most widely used SPICE simulator. Multisim also co-simulates VHDL, Verilog and RF devices so that you can analyze complete boards containing devices not practically modeled in SPICE.

- **Embedded C Programming and the Atmel AVR ver. 1.23.8d Evaluation**
  Downloaded from: http://www.dontronics.com/cvavr_download.html

- **Lego MindStorm 2.0**
  bricxcc_setup_3374.exe, ngc-win-2-5-r1.zip

- **Mathworks - Matlab 6.5 R13** *(network floating license - 50/64 concurrent users – no expiration)*
  - **Control Systems**
    This toolbox is a collection of algorithms that implement common control system design, analysis, and modeling techniques. Its broad range of capabilities encompasses both classical and modern control design methods, including root locus, pole placement, and LQG regulator design. Convenient graphical user interfaces simplify typical control engineering tasks.
  - **Fuzzy Logic**
    This toolbox extends the MATLAB environment to support the design of fuzzy logic based systems. The Fuzzy Logic Toolbox provides a graphical user interface to guide you through the steps of fuzzy design. It also includes functions for the latest fuzzy logic methods, such as fuzzy clustering and adaptive neuro-fuzzy learning.
  - **Image Processing**
    This toolbox provides a complete suite of digital image processing and analysis tools for MATLAB. Use the broad set of algorithms provided or modify them to develop customized tools to solve your unique image processing problems.
  - **Neural Network**
    This toolbox provides a complete set of functions and a graphical user interface for the design, implementation, visualization, and simulation of neural networks. It
supports the most commonly used supervised and unsupervised network architectures and a comprehensive set of training and learning functions.

- **Optimization**
  This toolbox provides proven algorithms for general and large-scale optimization. Additional functions are provided for linear programming, quadratic programming, nonlinear least-squares, and nonlinear equations.

- **Robust Control**
  This toolbox contains specialized functions for advanced "robust" multivariable feedback control system design, including systems where there may be modeling errors, dynamics that are not completely known, or parameters that can vary during the lifespan of the product. The powerful algorithms allow you to perform complex calculations while considering a number of parameter variations.

- **Signal Processing**
  The Signal Processing Toolbox is a collection of MATLAB functions that provides a rich, customizable framework for analog and digital signal processing. Graphical user interfaces support interactive analyses, and command-line functions support advanced algorithm development.

- **Statistics**
  The Statistics Toolbox provides functions and graphical user interfaces for analyzing historical data, modeling data, simulating systems, and developing statistical algorithms. These functions address a range of statistical areas such as linear and nonlinear modeling, multivariate statistics, calculation and fitting of probability distributions, hypothesis testing, and more.

- **Symbolic Math**
  The Symbolic Math Toolbox combines the symbolic mathematics and variable precision arithmetic capabilities of the Maple 8 symbolic engine with the powerful numeric and visualization capabilities of MATLAB.

- **System Identification**
  This toolbox is a collection of MATLAB functions for creating mathematical models of dynamic systems. It allows you to easily create accurate models based on observed input/output data. Written by Professor Lennart Ljung, a recognized leader in the field of system identification, the toolbox's carefully implemented algorithms ensure efficiency and reliable numeric results.

- **Technological Arts**
  - MicroLoad Download Utility, ver. 1.31
  - 68HC11 Starter package Disk, Rev. 8b

- **Microsoft Office XP**

- **Microsoft Visual Studio 2003.NET (MSDN annual subscription)**
• **Microsoft Visual Studio 6** *(MSDN annual subscription)*
  - Visual Basic
  - Visual C++
  - Visual FoxPro
  - Visual InterDev
  - Visual J++

• **Microsoft Visio 2002 Professional** *(MSDN annual subscription)*
  Visio 2002 helps you create professional-looking diagrams to effectively show others what you're saying. It includes a broad range of diagram types to convey concepts specific to your line of work.

• **Norton Virus Scan** *(campus licensed)*

• **Simucad - Silos ver. 2003.100** *(network floating license – 30 concurrent users – expires Sept. 30, 2003)*
  Affordable Verilog simulation EDA tools for FPGA and ASIC designs written in Verilog HDL. These Verilog HDL simulators perform **Logic Simulation** and **Fault Simulation** under the brand names **Silos®** and **HyperFault®**.

• **Xilinx ISE 4.2i** *(network license – 30 concurrent users - annual maintenance contract)*
  ISE **Foundation** is the industry's most complete programmable logic design environment. ISE **Foundation** includes the industry's most advanced timing driven implementation tools available for programmable logic design, along with design entry, synthesis and verification capabilities. With its ultra-fast runtimes, ProActive Timing Closure technologies, and seamless integration with the industry's most advanced verification products, ISE **Foundation** offers a great design environment for anyone looking for a complete programmable logic design solution.

• **ZipCentral** *(freeware)*