

# CSE / ENGR 142 Computer Programming I

## Overview and Welcome

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## Today's Outline

- What Is 142?
- What is programming?
- Should you be here?
- What to expect (workload, grades, difficulty, fun, ...)
- Course organization

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## Can't get in?

- Some new spaces will open up this week!
- **All you can do is keep trying**
  - No waiting list, no lottery
  - Matriculated undergrads have priority over grads and non-matriculated students
- Instructors do **not** have entry codes

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## What to do until then...

- You are welcome to attend this week and do the first assignments, but... **we cannot guarantee you will get in.**
- Go to some quiz section on Thursday
- CSE (the Computer Science and Engineering Department) has undergraduate advisors in Sieg 114.
  - See them for all registration advice and signatures (but **not entry codes**)
  - See them for information about becoming a major
  - See them if you get discouraged and want to drop

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## CSE/ENGR 142 Computer Programming I

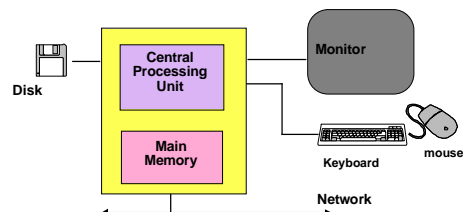
UW Catalog Description:

*Basic programming-in-the-small abilities and concepts. Highlights include procedural and functional abstraction with simple built-in data type manipulation. Basic abilities of writing, executing and debugging programs.*

Note: It doesn't say C (nor Java, FORTRAN, Pascal, ...)

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## What's a Computer?



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## What Is a Program?

- A **program** is a set of instructions that the computer is supposed to execute in order to solve some problem.
- Computers are **general purpose** devices.
  - I.e., just about **useless** (without a program)
- A program transforms a computer into a **special-purpose** device, capable of solving a specific problem.

*Footnote: "software" = programs*

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## Languages

- **Machine language** is very hard to understand
- A **high level language** would be very convenient
- A **compiler** translates a high level language to machine language
  - Machine Language - 1940's
  - Fortran, Lisp - 1950's
  - Cobol, Algol, APL, PL/I - 1960's
  - Basic, Pascal, C - 1970's
  - Smalltalk, C++, Modula, Ada, Prolog - 1980's
  - Java 1990's

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## C Is Not The Point; Programming is

- A few fundamentals underlie most programming languages:
  - variables, types, values, expressions
  - orderly, step-by-step execution
- A few concepts are key to good **program design**:
  - procedural, functional, & data abstraction
  - encapsulation, modularity, reusability

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## Problem Solving and Program Design

- Clearly **specify** the problem
- **Analyze** the problem
- Design an **algorithm** to solve the problem
- **Implement** the algorithm (write the program)
  - Documentation essential
- **Test** and verify the completed program
  - The test-debug cycle
- **Maintain** and update the program

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## Computers in the 60's

As big as a truckload of bricks

Weighed as much as a truckload of bricks

Cost as much as a truckload of **gold** bricks

Today: "**better ones in toys and toasters**"

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## If Cars Had Improved Like Computers...

- A Cadillac would cost \$0.50
- Do 0 to 60 in 3 milliseconds
- Go to the Moon and back on a tank of gas
- Fit in your pocket

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## Is The Revolution Over?

- Intel Pentium II has 7.5 million transistors
- 30-300 million transistors per chip easily foreseeable
- 10x faster clock speeds, 100x faster throughput conceivable
  - "Moore's Law"
- Advances also in memory, magnetic (disk) and optical (CD) storage, networking, etc.
- Yet prices aren't rising!

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## What about software?

- Major software-based products literally unimaginable 10 - 15 years ago
  - desktop publishing, Internet browsers, 3-D games
- Big improvements in
  - handwriting and speech recognition
  - computer animation and graphics
  - digital consumer products
    - cell phones, CD-ROM and DVD, etc.

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## Why Are We Here?

- Computers are changing the way science and engineering is done
- Computers will continue to change all our lives
- Programming is a key enabling technology
- *That's the Big Picture. What about you?*

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## Why Are You Here?

- "I know computing is important, and I need basic expertise."
- "I'm just curious."
- "I have this computer and I want to do X but I can't get software that does X."
- "It's a requirement for my major."
- "I want a career in computing."

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## Should you be here??

- If you already know C and the contents of this course...
  - You can go directly to CSE 143 (142 credit available if you do well in 143)
    - Go there today to check it out: Kane 120, 2:30 pm MWF
  - This course may be boring but will still be time-consuming. You'll have to do things "our way."
  - If you stay, please participate!

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## Should you be here??

- If you are a complete novice to programming...
  - Prior programming experience is NOT required!
- Programming a computer is very different from simply using one.
  - Many similarities to solving "word problems" in math
    - Symbol manipulation an integral part
    - Some people describe it as "puzzle solving"
  - Weird mix of high-level creativity and low-level picky details

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## What To Expect

- Grades:
  - Class average just below 3.0
  - Always some 4.0's, always some 0.0's
- Is this a tough course?
  - Contents are **challenging**
  - Projects can be **time-consuming**
  - Cramming won't work -- must keep up
- Fun?
  - Absolutely!

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## Advice for New Programmers

- Keep up with the course day-by-day
- Seek help early and often:
  - TA, instructor office hours
  - consultants in IPL
  - undergrad advisors in Sieg 114
  - Some special tutoring is available
- Consider joining a "low-background" section

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## The UW Drop Policy

- Historically, 10%-15% of CSE/ENGR 142 enrollees dropped the course
  - Most drops were after the 10th day under the old drop policy
- It's very hard to judge how challenging this course is by its first two weeks
- **Unfortunately, you must drop by 10th day !**
  - Once per year you get a "free" drop.
  - Also possible to change status to noncredit until week 7 of the quarter.

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## Course Organization

- Lectures 3 times a week
- Quiz section once a week
- Programming projects
  - In the lab or at home (with proper equipment)
  - Individual effort (not group projects)
- Two midterm exams
- Final exam - Wednesday, June 9
  - **May be a time change from original schedule!**
- Other activities: non-programming HW, quizzes

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## Quiz Section

- Quiz section: once a week
  - Review, questions, exercises, quizzes and more
- Designated sections
  - "low-background": for students without previous programming experience
  - "high-background": for students with considerable experience
  - All sections have identical assignments, tests, and grading criteria
- **Please memorize your student ID#, quiz section ID and your TA's name!**

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## Tutored Video Instruction (TVI)

- New last quarter, continuing this qtr
- 9:30 lecture will be recorded
- TVI sections will view and discuss
  - replaces their lecture and quiz section attendance
  - Three sections on campus
    - 4:30-6:20 MWF
    - Tell us Wednesday if you're interested

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## Textbook and materials

- **Text:** "Problem Solving and Program Design in C" - Hanly and Koffman
  - Either 2nd or 3rd edition ok
  - "self-check" and "quick-check" exercises highly recommended (answers in book)
- **Course Packets**
  - Vol. I: slides (based on last quarter's), old exams, reference material
  - Bring to every lecture to take notes on
  - Buy at: Professional Copy & Print, 4200 U. Way

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## Final Exam (Comprehensive)

- **Wednesday, June 9, 1999**
- **Times, but not the day, may be different from the on-line Time Schedule (will be announced when we know the details)**
- With permission you can move to the exam period other than the one you are scheduled for.
- If you have a problem with both times contact the instructor early in the quarter.
- ***It will not be possible to take the final on any other day.***

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## 142 Web Site

<http://www.cs.washington.edu/education/courses/142>

- Messages from class mailing list (read often)
- Homework projects
  - Instructions
  - Downloading
  - Turn-in
- Lecture schedule and current reading
- Lecture slides
- Tips, hints
- Office hours
- Exam information, lab schedules, etc. etc.

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## IPL: Intro Programming Lab

- Sieg 323
- Pentium PC's running Windows NT
  - Microsoft Visual C++ Version 6.0
  - Web browsers
  - Electronic mail
- 142 consultants (posted hours)
- **Pay a visit there today!**

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## Course Staff

*Here to help you succeed!*

### Instructors

- You can go to either instructor's office hours
- **TA's**
  - Do all the homework grading
  - You can go to any TA's office hours
- **Lab staff in IPL**
  - Operator (front-desk)
  - 142 Consultants
- **Teleconsultants:** Get help at home!
- **CSE undergrad advisors:** Sieg 114
- **Instructional technologist**

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## Mailing Lists & Newsgroups

- Announcements, tips, hints, place to ask questions and get answers
- **uwash.class.cse142.\*** newsgroups for general discussions
- "cse142-announce" mailing list for announcements from course staff
- Must subscribe first
  - send mail to: **majordomo@cs**
  - message text exactly as follows:  
**subscribe cse142-announce**
- **Details on the Web**

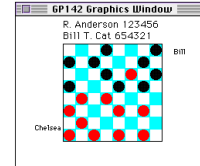
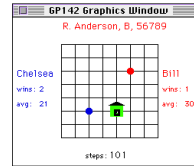
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## Homework # 0

- Due in 2 parts: This Friday(!) and Monday
- Read Chapter 1 and handouts.
- Go to IPL (Sieg 323) and start learning the system. Be sure and read section 1.2 before going to lab.
- Start playing with the other software tools.
- There's **lots** to read during the quarter: Start going & keep going!

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## Homework Can Be Fun (Some examples from Autumn 1994)



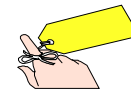
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## If you compute at home...

- Stay connected with Web and e-mail
- Get a compiler - MSVC++ 6.0 recommended
- Windows 95/NT/MSVC is our official platform
  - some support for others
- Do first project in IPL
  - just to become familiar with it
- Help on computing at home is on 142 web site
- Expect a few headaches (but worth it!)

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## Tutorials



- Optional tutorials, this week
- Hands-on sessions in the IPL to get you familiar with the system
  - Windows 95/NT, Web browser, basic MSVC, ...
  - Meant for people unfamiliar with the software
    - No advanced stuff
  - Can do assign. 0 (esp. part B) during tutorial
  - Seating: 1st come, 1st served
  - Length: about 1 hour

Location: IPL, Sieg 323

Time: TBA (check the Web)

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