

# Computer Science & Engineering 150A

## Problem Solving Using Computers – Laboratory

### Lecture 03 – Input and Math

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- We're new, ok?
- Code Lab is \$25, meant to be a “textbook-like” purchase.
- Too late for that. Optional, and recommended.
- Instead of grading Code Lab, more take-home work!

<b>Grade Item</b>	<b>Percentage</b>
In-lab assignments	60%
Take-home homework/quizzes	40%

- `scanf("format string", parameters... );`
  - Use the same as `printf`, except for `&` before variables.

```
scanf("%d %lf", &myInt, &myDouble);
```

- Be sure to define variables ahead of time!

```
#include <stdio.h>
int main(void)
{
    int rating;
    scanf("%d", &rating);
    printf("I give this class %d stars out of 10!\n", rating);
    return 0;
}
```

- Set a value (=)

```
int myVariable = 50;
```

- Addition (+), Subtraction (-)

```
a = b + c;    d = e - f;
```

- Multiplication (\*), Division (/), Remainder (%)

```
product = A * B;  quotient = C / D;  
remain = E % F;
```

Be careful of rounding! When in doubt, use doubles.  
Or, use 25.0, -1.0, (add .0) when using integer literals

Math Expression

C Code

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$\frac{ab}{1-c}$	<code>(a * b) / (1 - c)</code>
$x^2 + x + 1$	<code>x * x + x + 1</code>

– Watch order of operations!

`abs(x)``ceil(x)``cos(x)``exp(x)``fabs(x)``floor(x)``log(x)``log10(x)``pow(x,y)``sin(x)``sqrt(x)``tan(x)`

Math Expression

C Code

$$5 \tan(x - 1)$$

`5.0 * tan(x-1)`

$$\left| \frac{1}{\sqrt{1-x^2}} \right|$$

`fabs(1.0/sqrt(1-x*x))`

## Example: Quadratic Formula

CSCE150A

Code Lab

Input

Math

$$ax^2 + bx + c = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Functions:

abs(x)

ceil(x)

cos(x)

exp(x)

fabs(x)

floor(x)

log(x)

log10(x)

pow(x,y)

sin(x)

sqrt(x)

tan(x)

Operators:

+ - \* / %

scanf:

scanf("%d", &amp;myInt);

scanf("%lf", &amp;myDouble);