I am free to take all of these super awesome classes!!

aka: What do these classes mean

What is the UPL

- A student-run lab in the CS building
- A place for students to collaborate and talk about projects
- "Hub" for the community - many events are affiliated/hosted by UPL
- YOUR group!

http://www.upl.cs.wisc.edu/

CS 352 - Digital System Fundamen.

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 354 - Machine Organization

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 367 - Data Structures

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 402 - Teach kids Scratch

- ## What should a student know before taking the class?
    - They should have basic programming knowledge. Having taken 202 or 302 is sufficient. Besides that, you just need an interest in teaching kids and giving back to the community.

- ## What topics does the course cover?
    - 402 is a service learning course where students go out to a local site (usually an elementary school) and lead a weekly after school club. The lectures are meant to help students be more effective club leaders and teachers.

- ## What is the most interesting thing one will learn in this class?
    - If you want to explain a concept to 10-year-olds, you need to really understand it yourself. This course helps you learn how to communicate computer science in a way that the kids can understand -- and by the end of the semester, you get the satisfaction of watching 4th and 5th graders doing programming with loops, conditionals, variables, concurrency, and other advanced CS concepts.

CS 412 - Numerical Methods

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 425 - Combinatorial Optimization

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 435 - Cryptography

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 475 - Combinatorics

- What should a student know before taking the class?
  - It does help to know linear algebra, such as Math 340 or a similar course. Strictly speaking this is not required, but the type of thinking for 340 and 475 are rather similar.

- What topics does the course cover?
  - See the syllabus on Math website

- What is the most interesting thing one will learn in this class?
  - Its not a matter of one particularly interesting thing standing out. It is a matter of the course material giving the student the ability to solve a wide array of problems that come up in combinatorics.

CS 514 - Numerical Analysis

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 520 - Theory of Computing

- What should a student know before taking the class?
  - "See prereqs"

- What topics does the course cover?
  - about the fundamentals of computing. What is computation, what can be formulated, what is computable, what is not, etc.

- What is the most interesting thing one will learn in this class?
  - How to think rigorously about computations

CS 525 - Linear Programming Meths.

- ## What should a student know before taking the class?

  - You should have a good knowledge of linear algebra: algebra with matrices and vectors, solving linear systems, matrix inverses. You should also know how to program in Matlab (or be prepared to learn the basics in the early weeks of class).

- ## What topics does the course cover?

  - The course is about linear programming, a fundamental problem in optimization that is useful in a huge variety of applications. We cover some representative applications, then study a fundamental algorithm - the simplex method. We study duality theory, a topic both of practical and theoretical interest. We study how LP solutions change as the data defining the problem change, and examine the application of LP to problems in approximation and machine learning. We also discuss extensions of LP methodology to two wider classes of problems - Linear Complementarity Problems (which arise in game theory) and quadratic programming (which arise in many applications, including machine learning).

CS 525 - Linear Programming Meths.

- What is the most interesting thing one will learn in this class?

    - You'll learn the fundamentals of an important computational algorithm (one of the "top 10 algorithms of the 20th century"), learn how widely optimization formulations can be applied, and gain some basic knowledge of the mathematical beauty and practicality of duality theory.

CS 526 - Advanced Lin. Program.

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 534 - Comp. Photography

- What should a student know before taking the class?
    - Prereq is 367 and some knowledge of calculus and linear algebra. Program assignments will be in Matlab though students are not required to know Matlab before starting the course; there will be a couple of lectures on Matlab and otherwise students will have to learn it on their own.

CS 534 - Comp. Photography

- What topics does the course cover?

   We are in the early years of an explosive growth of digital images. A recent study estimated that more than 1 trillion photos have been captured by digital cameras, over 3.5 billion cameras are in use today, and over 1.1 billion new camera phones were shipped in 2011. Because digital cameras allow easy capture of many images, billions of images are publicly available on the web, and computer storage and processing of digital images is cheap and easy, there is now emerging a wide range of new computational techniques and applications for capturing, analyzing, manipulating, combining, searching, synthesizing, and using images. Computational Photography is a new field that brings together photography, optics, computer vision, and computer graphics to overcome the limitations of traditional cameras by creating new photographic functionalities and experiences of our visual world from sets of images. For example, Microsoft's Photosynth application allows users to interactively navigate around a 3D location by building a sparse 3D model from a large number of images. Key component image manipulation methods include warping, morphing, filtering, mosaicing, texture synthesis, segmentation, high dynamic range imaging, image blending and compositing, merging images taken at multiple exposures under different lighting conditions, and building 3D models from a set of images taken from multiple viewpoints of an object or scene.

   ○   Course syllabus is at: http://pages.cs.wisc.edu/~dyer/cs534/syllabus.html

CS 534 - Comp. Photography

- What is the most interesting thing one will learn in this class?
    - How panoramic images are made and how 3D scene reconstructions can be done from a set of images.
    - More info online on the course webpage at: http://pages.cs.wisc.edu/~dyer/cs534.html

CS 536 - PL & Compilers

- What should a student know before taking the class?
  - 367 should be fine
- What topics does the course cover?
  - Scanning, parsing, Code generation
- What is the most interesting thing one will learn in this class?
  - For students from 367, working with a large program
  - How the compilation process from source to machine code works

CS 537 - Operating Systems

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 540 - AI

- What should a student know before taking the class?
    - Good command of CS data structures, comfortable with Java and Eclipse

- What topics does the course cover?
    - Learning from data, systematically searching for solutions, probabilistic reasoning, case-based reasoning, logical-based reasoning, representing world knowledge in computers, how computers play games like chess, decision trees, neural networks, genetic algorithms, philosophical issues in artificial intelligence

- What is the most interesting thing one will learn in this class?
    - How computers can use data to intelligently make decisions

CS 552 - Computer Architecture

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 559 - Graphics

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 564 - Databases

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 576 - Bioinformatics

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 577 - Algorithms

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 578 - Contest-Level Programmin'

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

CS 640 - Computer Networks

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

NOT NEXT SEM:
CS 506 - Software Engineering

- What should a student know before taking the class?

- What topics does the course cover?

- What is the most interesting thing one will learn in this class?

Other Advanced Courses?

CS 841

CS 760

Questions?

Gen eds?

Event will be repeated: How to improve?