Course Summaries: UW Computer Science

CSE421

Course Description

Introduction to algorithms. Topics include sorting, searching, divide-and-conquer, dynamic programming, greedy algorithms, and NP-completeness.

Course Objectives

- Understand algorithmic strategies and complexity.
- Apply problem-solving techniques like dynamic programming and greedy methods.

Topics

- Sorting
- Recurrence relations
- Greedy algorithms
- Dynamic programming
- Graph algorithms
- NP-completeness

Course Summaries: UW Computer Science

CSE402

Course Description

Explores domain-specific languages, language design, and implementation. Includes interpreters and compilers.

Course Objectives

- Design a domain-specific language.
- Build interpreters and compilers using modern tools.
- Understand formal grammars and parsing.

Topics

- Parsing
- ASTs
- ANTLR
- Semantic analysis
- Interpreter design

Tools

- ANTLR
- Regular Expressions
- Compilers
- Interpreters

Course Summaries: UW Computer Science

CSE391

Course Description

Focuses on essential tools used in programming and system development. Emphasis on the Unix shell, scripting, and automation.

Course Objectives

- Master the Unix shell and core utilities.
- Write scripts to automate development tasks.
- Use tools for debugging, profiling, and performance measurement.

Topics

- Bash
- Regex
- sed
- Shell scripting
- jq
- Git

Tools

- Bash
- Git
- Regex
- sed
- jq
- Browserflow

Course Summaries: UW Computer Science

CSE390Z

Course Description

Workshop to support students concurrently taking discrete math. Focus on study skills and math reasoning.

Topics

- Logic
- Proof techniques
- Mathematical reasoning

Course Summaries: UW Computer Science

CSE369

Course Description

Covers digital logic and hardware design with SystemVerilog and FPGAs.

Course Objectives

- Design combinational and sequential logic circuits.
- Program FPGAs with SystemVerilog.

Topics

- Karnaugh maps
- FSMs
- SystemVerilog
- Logic gates

Tools

- SystemVerilog
- DE1-SoC FPGA Kit

Course Summaries: UW Computer Science

CSE344

Course Description

Introduction to data management systems including SQL, query processing, and transactions.

Topics

- SQL
- Query optimization
- Web-data
- Transactions

Course Summaries: UW Computer Science

CSE340

Course Description

Focuses on front-end development with Dart and Flutter. Project-based design of mobile interfaces.

Course Objectives

- Design and implement interactive mobile UIs using Flutter.

Topics

- Stateful widgets
- Routing
- Input handling
- Animations

Tools

- Dart
- Flutter

Course Summaries: UW Computer Science

CSE351

Course Description

Covers computer systems from machine-level representation to memory, I/O, and performance.

Topics

- C programming
- Assembly
- Memory layout
- System calls

Tools

- GDB
- C
- x86-64 Assembly
- Linux terminal

Course Summaries: UW Computer Science

CSE332

Course Description

Covers data structures, algorithms, and parallelism in Java.

Topics

- Hashing
- Trees
- Graphs
- Parallel sorting

Tools

- Java
- IntelliJ
- Ed
- Gradescope

Course Summaries: UW Computer Science

CSE331

Course Description

Covers software engineering practices, modularity, testing, and specifications.

Topics

- Specifications
- Design patterns
- Testing
- UML

Tools

- Typescript
- VS Code
- Gradescope

Course Summaries: UW Computer Science

CSE312

Course Description

Intro to probability and statistics for CS students. Topics include distributions and simulation.

Topics

- Probability
- Distributions
- Bayes' Theorem
- CLT

Tools

- Python

Course Summaries: UW Computer Science

CSE163

Course Description

Intermediate programming and data analysis in Python.

Topics

- Pandas
- OOP
- Data visualization
- ML

Tools

- Python
- Jupyter
- Seaborn
- Scikit-learn
- NumPy

Course Summaries: UW Computer Science

CSE160

Course Description

Intro to programming with real-world datasets. Problem-solving using Python.

Topics

- Loops
- Functions
- Data types
- Real-world projects

Tools

- Python
- Jupyter

Course Summaries: UW Computer Science