

Benjamin Dicken | Curriculum Vitae

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Overview

CS Education	I enjoy providing well-organized and high-quality CS education to the next generation of computer scientists. I have taught multiple courses at the University of Arizona, including CS 101, 110, 250, 317, 337, and 352. The topics of these span from introductory programming, to mobile app programming, to web development. I have also been involved in course design and revamp efforts. I designed the curriculum of CS 101 and 317, and have done much content development and redesign for CSc 110.
Software Engineering	I have experience building, testing, documenting, and maintaining software from the ground-up. In my past software engineering experience, especially at Dataware Ventures, I have had the opportunity to do exactly this. I have been personally responsible for prototyping and building multiple tools from the ground-up.
Program Analysis	Strong background writing both static and dynamic program analysis tools. I have written analysis tools using the Intel Pin API, GDB's Python API, LLDB's various APIs, RR, and custom valgrind tools. In addition, I have experience writing static program analysis tools in with the clang, LLVM, and libdwarf APIs, and working with tools like objdump, nm, and dwarfdump.
Web Engineering	I have built a number of web applications with JS, python, HTML/CSS for or school projects, research groups, and personal projects, in addition to having taught a web programming course at the university level. I also have experience with widely-used libraries and technologies such as In building these apps and teaching web programming, I have used JQuery, NodeJS, MongoDB, and D3.js.

Professional Experience

Jan 2017–Present	Computer Science Lecturer at University of Arizona. Taught a variety of courses for the Computer Science Department at the UofA, including CS 110 (Intro to Computer Programming I), CS 317 (Mobile Application Programming), CS 352 (Systems Programming and UNIX), CS 337 (Web Programming), CSc 101 (Intro to Computer Science) and CSc 250 (Computing for the Sciences). The instruction of these courses required a solid understanding of a wide selection of computer programming languages and technologies, including Python, Matplotlib, Java, Android Studio, HTML/CSS, Javascript, NodeJs, SQL, and C. Three time awardee of the CS department faculty teacher award (2018, 2019, 2021). Developed strong presentation, interpersonal, and written communication skills through teaching large classes, managing large groups of TAs, and interacting with other faculty, staff, and students.
Jan 2013–Dec 2016	Software Developer at Dataware Ventures. Dataware works to improve the performance of both open-source and proprietary software DBMS software. My primary responsibility was writing static and dynamic program analysis tools using industry-standard libraries and frameworks such as LLVM, Intel Pin, Valgrind, gdb, rr, and more. These tools were used to analyse the characteristics of small and large programs. In addition, I did work in optimizing the postgres DBMS, and wrote tools to measure software performance improvement between versions. Significant usage of C, C++, Python, and Java.
Aug 2008–Aug 2012	Undergraduate IT Analyst at University of Arizona Undergraduate IT Analyst at the University of Arizona – Udall Center. Responsible for UNIX server administration, developing and maintaining database-driven web applications, and troubleshooting hardware and software issues for faculty, staff and student computers on Mac, Windows, and Linux operating systems. Assist in administration of Udall Center networks and servers in five buildings across the University of Arizona campus.

Teaching Experience

CS 101	Introduction to Computer Science Designed course from the ground up and delivered its first two offerings. Taught in Fall 2017, Spring 2018.
CS 110	Introduction to Computer Programming I Revamped the course and taught numerous times. Taught in Fall 2018 2019 2020 2021, Spring 2019 2020 2021, Summer 2017 2019 2020 2021 2022.
CS 250	Computing for the Sciences Taught in Spring 2017 2018.
CS 317	Mobile Application Programming Developed course from the ground up. Taught in Fall 2019 2020, Spring 2022.
CS 337	Web Programming Taught in Summer 2020 2021, Fall 2021.
CS 352	Systems Programming and UNIX Taught in Spring 2021, Summer 2021.

Research Experience

2012–2013	AZDBLab REU Arizona Database Laboratory research member at the University of Arizona. Held an NSF-funded REU position working on a software system under the guidance of Dr. Richard Snodgrass. This software system is designed for query execution and query runtime analysis for many popular DBMSs. Work includes server/client network interactions, source code re-factoring, mobile and web application development, and DBMS interaction with SQL. Software written in Objective-C, Java, JSP, XML, and Javascript.
2012	Computer Vision Research – SLIC Undergraduate computer vision research at the University of Arizona – Computer Vision group. Worked with Dr. Kobus Barnard and Dr. Alon Efrat on the SLIC computer vision project. Led the development of the SLIC iOS mobile application, expanded the SLIC content retrieval and search API using PHP and SQL, and worked on improvements to the SLIC front-end web interface.

Education

2013–2015	MS Degree in Computer Science, University of Arizona.
2010–2013	BS Degree in Computer Science, minor in ISTA, University of Arizona.
2007–2010	Associates Degree in Liberal Arts, Pima Community College.

Community

2012–2015	Involvement in the ACM student club at the University of Arizona, both as a member and an officer. Helped coordinate hackathon and programming-competition events, delivered presentations, and assisted with club management.
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Programming Languages

Proficient in	Python, Java, Javascript, HTML/CSS, C, Bash
Experience with	Perl, Scala, Objective-C, C++, PHP, R, SQL

Library and Tools Experience

Java	Eclipse, ANT, JDBC, ORM (Hibernate), JUnit
C/C++	GCC, GDB, RR, Valgrind, Clang/LLVM, Intel Pin, Boost
Web	Apache server, JQuery, NodeJS, D3.js
Mobile	Xcode, PhoneGap, Android Studio
DBMS	MySQL, Postgres, SQLite
General	Vim, bash, zsh, unix

Conferences

Mar 2019	SIGCSE Attendee and presenter. Minneapolis, Minnesota
Feb 2018	SIGCSE Attendee. Baltimore, Maryland
Oct 2015	LLVM Developer's Meeting. Attendee. San Jose, California
Feb 2015	International Symposium on Code Generation and Optimization (CGO). Attendee. San Francisco, California
Dec 2012	Global Symposium on Racing and Gaming. Presented educational racetrack industry software written by my team and I. Tucson, Arizona.

Awards

2019	UA CSc Teacher of the Year Award
2018	UA CSc Teacher of the Year Award
2013	UA CSc Excellence in Undergraduate Research Award
2012	Galileo Circle Society Scholar Award
2010	Arizona Board of Regent's High Honors Tuition Scholarship
2010	Tucson Chamber of Commerce high school senior scholarship award
2010	Pima Federal Credit Union high school senior scholarship award

Graduate Courses

CSc 552	Advanced Operating Systems
CSc 547	Green Computing
CSc 520	Principles of Programming Languages
CSc 560	Database Systems Implementation
CSc 573	Theory of Computation
CSc 566	Computer Security
CSc 538	Computational Linguistics
CSc 555	Advanced Natural Language Processing
CSc 544	Data Visualization

Major Courses

CSc 127a	Introduction to Computer Science
CSc 127b	Introduction to Computer Science
CSc 245	Introduction to Discrete Structures
CSc 345	Analysis of Discrete Structures
CSc 335	Object-Oriented Programming and Design
CSc 337	Web Programming
CSc 252	Computer Organization
CSc 352	Systems Programming and UNIX
CSc 473	Automata, Grammars and Languages
CSc 445	Algorithms
CSc 460	Database Systems
CSc 452	Operating Systems
CSc 422	Parallel and Distributed Programming

Minor Courses

ISTA 100	Great Ideas of the Information Age
ISTA 116	Statistical Foundations
ISTA 161	Digital Ethics
ISTA 120	Dealing with Data
ISTA 301	Computing in the Arts
ISTA 392	iOS App Development for Citizen Science
ISTA 401	Designing an Installation