Thomas VanDrunen

Curriculum vitæ

Mathematics and Computer Science
Wheaton College
501 College Ave, Wheaton, IL 60187
☎ *+1 630 752 5692 (office)*
🕿 *+1 630 639 2255 (mobile)*
✉ *Thomas.VanDrunen@wheaton.edu*
🖥 *http://cs.wheaton.edu/∼tvandrun*
Updated February 3, 2022

Personal information

Citizenship   USA

Education

2004   **PhD**, *Computer Science*, Purdue University, West Lafayette, IN.
Dissertation: *Partial Redundancy Elimination for Global Value Numbering.*
Academic advisor: Antony Hosking.

2000   **MSc**, *Computer Science*, Purdue University, West Lafayette, IN.

1998   **BSc**, *Mathematics* and *Computer Science*, Calvin College, Grand Rapids, MI.

Teaching interests

Data structures and algorithms; computational linguistics; discrete mathematics supplemented with functional programming; machine learning; computer science for non-majors, especially in a liberal arts context.

Research interests

Natural language processing; computer science education.

Professional experience

Since 2011   **Associate Professor with tenure** *Department of Mathematics and Computer Science*, Wheaton College, Wheaton, IL.

2004–2011   **Assisstant Professor** *Department of Mathematics and Computer Science*, Wheaton College, Wheaton, IL.

2001–2004   **Graduate Research Assistant**, *Department of Computer Science*, Purdue University, West Lafayette, IN.

2003   **Graduate Teaching Assistant**, for CS 502 Compilers, *Department of Computer Science*, Purdue University, West Lafayette, IN.

2001   **Instructor**, for CS 180 (Introduction to Programming) *Department of Computer Science*, Purdue University, West Lafayette, IN.

1998   **Undergraduate Fellow**, *Department of Mathematics and Computer Science*, Argonne National Laboratory, Argonne, IL.

Publications

Book – 2022   *Algorithmic Commonplaces: A Textbook for Data Structures and Algorithms*, under contract with Franklin, Beedle and Associates. Expected 2022.

Book review – 2017   "Review of *Networked Theology* by Heidi Campbell and Stephen Garner," in *Perspectives on Science and Christian Faith*, 69:3, Sept 2017, p 191–192

Magazine article – 2017   "Functional Programming as a Discrete Mathematics Topic," in *ACM Inroads* 8(2):51–58, June 2017.

Book – 2012   *Discrete Mathematics and Functional Programming*, Franklin, Beedle and Associates. August 2012.

Conference paper – 2011   "The Case for Teaching Functional Programming in Discrete Math," in the proceedings of the Educators' Symposium at Systems, Programming, Languages and Applications: Software for Humanity (SPLASH), October 2011.

Journal article – 2010   "A Christian Analysis of Gabriel's 'Mob Software,' " *The Journal of the ACMS*, 2010-2011 issue.

Journal article – 2008   "Wake up and smell the coffee: Evaluation methodology for the 21st century," with S. Blackburn et al, in *Communications of the ACM* 51(8):83–89.

Conference paper – 2006   "The DaCapo benchmarks: Java benchmarking development and analysis," with S. Blackburn et al., in the proceedings of Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA), October 2006.

Conference paper – 2006   "Java Interfaces in CS 1 Textbooks," in the proceedings of the Educators' Symposium at Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA), October 2006.

Book chapter – 2005   "How is God's Creativity Manifested in Computer Science?" in *Not Just Science*, edited by Dorothy Chappell and David Cook.

Journal article – 2004   "Anticipation-based partial redundancy elimination for static single assignment form," with A. L. Hosking. *Software—Practice and Experience*, 34(15).

Conference paper – 2004   "Value-Based Partial Redundancy Elimination," with A. L. Hosking, in the proceedings of the Thirteenth International Conference on Compiler Construction (CC), March 2004.

Workshop paper – 2004   "Visitor-Oriented Programming," with J. Palsberg, in the proceedings of the Eleventh Workshop on Foundations of Object-Oriented Languages (FOOL), Jan 2004.

Teaching

Courses taught at Wheaton College

Programming   **CSCI 235: Programming I: Problem-Solving.** Innovations include the development of a laboratory section, the reordering of material on polymorphism, and the replacement of an earlier course with this, the first in a two-semester sequence. (Eight times, Fall 2004 through Fall 2009; similar course at Purdue University, Summer 2001.)

Programming   **CSCI 240: Programming for the Mathematical Sciences.** Developed course as an introductory programming course for students in math, statistics, or other mathematical fields who are unlikely to take more than one semester of programming. (Spring 2022)

Theory **CSCI/MATH 243: Discrete Mathematics and Functional Programming.** Developed course as a foundational component in a thorough revision of the computer science curriculum. Innovations include composing a course text and pioneering the teaching of discrete mathematics and functional programming (using the ML programming language) in a single course. (Twenty-three times, Spring 2005 through Spring 2022.)

Programming **CSCI 245: Programming II: Object-Oriented Design.** New course, designed and taught for the first time as a foundational component in a thorough revision of the computer science curriculum. Innovations include comparing theoretical analysis of algorithms with instrumentation of implementations, design patterns, and an introduction to systems programming in C. (Sixteen times, Spring 2007 through Spring 2016.)

Software engineering **CSCI 335: Software Development.** New course, designed and taught for the first time as a foundational component in a thorough revision of the computer science curriculum. Innovations include extensive coverage of design patterns, a semester-long group project, and student presentations of textbook material. (Spring 2014, Spring 2012, Spring 2011, Spring 2010, Spring 2009, Fall 2007.)

Programming & theory **CSCI 345: Data Structures and Algorithms.** Innovations include designing a new comprehensive series of projects, emphasizing the interplay between theory and experimentation when studying correctness and efficiency, and adding the topic of dynamic programming. (Eight times, Spring 2015 through Spring 2022.)

Programming languages **CSCI 365: Programming Language Concepts.** Innovations include an emphasis on theory and foundations and a highly-developed sequence of implementation projects. (Six times, Spring 2006 through Spring 2016.)

Machine learning **CSCI 381: Machine Learning.** Seminar course, taught with this area for the first time. Topics include k-nearest neighbors, expectation-maximization, linear regression, multilayer perceptrion networks, support vector machines, and principal component analysis. (Spring 2019 and Spring 2021.)

Machine learning **CSCI 384: Computational Linguistics.** Taught and designed as a new course. Topics include statistical language modeling and applications across the liberal arts. (Four times, Fall 2013 through Fall 2021.)

Programming **CSCI 394: Advanced Programming.** Seminar course, taught with this area for the first time. Topics in this course were later encorporated into other courses in the curriculum, especially CSCI 335. (Spring 2005.)

Theory **CSCI 394: Advanced Discrete Mathematics and Functional Programming Seminar.** Seminar course, taught with this area for the first time. Topics include graph theory, lattices, group theory, RSA encryption, automata theory, and advanced functional programming techniques. (Spring 2011 and Spring 2008.)

Theory **CSCI 445: Analysis of Algorithms.** Innovations include empirical projects to compare with results of theoretical findings and a module on the theory of computation. (Nine times, Fall 2004 through Fall 2020.)

Integrative issues **CSCI 494: Social and Ethical Issues in Computing.** (Spring 2020, Spring 2017, and Spring 2009.)

3

Institutional service
Committee and administrative work at Wheaton College

2013–	Serving as Computer Science **Program Coordinator**.
2017–2020	Serving on the **Academic Policies Committee** (chair during the Fall 2020 semester).
2007–2015	Served on the **Faculty Financial Affairs Committee** (chair during the 2008–2009 academic year).
2008–2009,2020	Served on **Faculty Council**.
2005–2007	Served on the **Hearing Panel for Student Conduct** (chair during the 2006–2007 academic year).

Other professional activities

Award	Received Wheaton College senior faculty teaching achievment award (2017).
Award	Jointly received most infulential paper at OOPSLA 2006 (award presented at OOPSLA 2016).
Peer institutional service	Served as external reviewer for the computer science program at Covenant College (Spring 2015).
Peer institutional service	Served as external member for computer science curricular revision advisory committee at Trinity Christian College (Summer and Fall 2013)
Continuing education	Attended courses on natural language processing at the Language Technology Institute at Carnegie Mellon University (sabbatical, Spring 2013)
Continuing education	Attended seminar on teaching discrete mathematics at Messiah College (Summer 2006)
Award	Received Computer science graduate teaching assistant award (2003)
Continuing education	Attended International School on Foundations of Security Anaysis and Design (FOSAD) (Fall 2000).