COMPUTER SCIENCE

http://www.cs.miami.edu

Dept. Code: CSC

Introduction
The Department of Computer Science offers undergraduate and graduate education in Computer Science, and performs research in various areas of Computer Science. The Department has faculty with strong accomplishments in the fields of algorithm engineering, automated reasoning, bioinformatics, computational complexity, computational geometry & computer graphics, cryptography & network security, data mining, data science, molecular computation, multimedia systems, music information retrieval, robotics, scientific computing, scientific visualization, semantic web, and wireless & mobile computing.

Degree Programs
The Department of Computer Science offers

• a Master of Science (MS) in Computer Science
• a Doctor of Philosophy (PhD) in Computer Science

Note
All Computer Science graduate TAs and RAs must complete RCR training during their first semester in the department. All other Computer Science graduate students must complete Responsible Conduct of Research (RCR) training before starting research work. Information about RCR training can be found from UM ethics programs, here (http://www.miami.edu/index.php/ethics/projects/rcr).

Masters Programs in Computer Science

• M.S. in Computer Science (http://bulletin.miami.edu/graduate-academic-programs/arts-sciences/computer-science/computer-science-ms)
• Five-Year B.S. and M.S. in Computer Science (http://bulletin.miami.edu/graduate-academic-programs/arts-sciences/computer-science/five-year-bs-ms-computer-science)

Doctoral Program in Computer Science

• Ph.D. in Computer Science (http://bulletin.miami.edu/graduate-academic-programs/arts-sciences/computer-science/computer-science-phd)

CSC 607. Logic. 3 Credit Hours.
Propositional and first order logic: completeness. Computational logic: Robinson’s resolution. Formalized theories: arithmetic, Godel’s incompleteness theorem, Tarski’s theorem on undefinability of truth.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 609. Data Security and Cryptography. 3 Credit Hours.
Prerequisite: CSC 317 or CSC 427.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 618. Interpreters and Compiler Theory. 3 Credit Hours.
Prerequisite: CSC 419.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 623. Theory of Relational Databases. 3 Credit Hours.
Prerequisite: CSC 423.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 629. Introduction to Computer Graphics. 3 Credit Hours.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 632. Introduction to Parallel Computing. 3 Credit Hours.
Parallel computing systems shared-memory parallel programming, with open MP, distributed-memory parallel programming, software with open MPI software package. Applications: vector and matrix operations, sorting, image processing.
Prerequisite: CSC 317.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 640. Algorithm Design and Analysis. 3 Credit Hours.
Design techniques include divide-and-conquer, greedy method, dynamic programming, backtracking. Time and space complexity. Sorting, searching, combinatorial and graph algorithms.
Prerequisite: CSC 317.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 645. Introduction to Artificial Intelligence. 3 Credit Hours.
Prerequisite: CSC 545.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 647. Computational Geometry. 3 Credit Hours.
Algorithms for solving geometric problems arising from application domains including graphics, robotics, and GIS.
Prerequisite: CSC 317.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.
CSC 649. Bioinformatics Algorithms. 3 Credit Hours.
Components: LEC.
Grading: GRD.
Typically Offered: Fall.

CSC 656. Multimedia Systems. 3 Credit Hours.
Prerequisite: CSC 317.
Components: LEC.
Grading: GRD.
Typically Offered: Fall & Spring.

CSC 670. Directed Reading. 2-4 Credit Hours.
Components: THI.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 685. Topics in Computer Science. 1-3 Credit Hours.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 686. Topics in Computer Science. 1-3 Credit Hours.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 687. Topics in Computer Science. 1-3 Credit Hours.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 688. Topics in Computer Science. 1-3 Credit Hours.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 689. Topics in Computer Science. 1-3 Credit Hours.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 690. Seminar for Beginning Graduate Students. 1-3 Credit Hours.
Flexible topics of interest to beginning graduate students.
Components: THI.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 692. Seminar. 1-2 Credit Hours.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 707. Logic Programming. 3 Credit Hours.
Programming in Prolog, Fix-point semantics, Declarative semantics, Completeness of SLD-resolution, Negation, Implementation of logic programming languages. Deductive databases.
Prerequisite: MTH 506 and CSC 317.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 711. Theory of Computation. 3 Credit Hours.
Recursive functions, Markov algorithms, Turing machines. Unsolvability.
Prerequisite: CSC 317 or CSC 517.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 712. Complexity Theory. 3 Credit Hours.
Models of computations, Blum's axioms, intractability, NP-completeness.
Prerequisite: CSC 427.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 724. Mobile Wireless Systems. 3 Credit Hours.
Cellular Systems, multiple access techniques, wireless networking, mobile IP, power management, user location information management, TDMA, CDMA, and GSM systems, data broadcasting.
Prerequisite: CSC 424.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 746. Neural Computing. 3 Credit Hours.
Prerequisite: CSC 317.
Components: LEC.
Grading: GRD.
Typically Offered: Fall.

CSC 749. Automated Reasoning. 3 Credit Hours.
Prerequisite: CSC 317 or CSC 645.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 751. Semantic Web. 3 Credit Hours.
An overview of the underlying semantic web technologies. Ontology construction and implementation using tools and APIs (logic, XML, RDF, RDFS). Theoretical and practical aspects of knowledge representation (description logic, RDF, RDFS, SPARQL, SROIQ(D)). Designing and debugging ontologies (ontology engineering, entailment tools, project).
Prerequisite: CSC 317 and MTH 309.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.
CSC 752. Autonomous Robotic Systems. 3 Credit Hours.
Prerequisite: CSC 317 and MTH 210.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 756. Advanced Multimedia Systems. 3 Credit Hours.
Prerequisite: CSC 656.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 785. Advanced Topics in Computer Science. 1-3 Credit Hours.
Advanced Topics in Computer Science
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 786. Advanced Topics in Computer Science. 1-3 Credit Hours.
Advanced Topics in Computer Science
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 787. Advanced Topics in Computer Science. 1-3 Credit Hours.
Advanced Topics in Computer Science
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 788. Advanced Topics in Computer Science. 1-3 Credit Hours.
Advanced Topics in Computer Science
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 789. Advanced Topics in Computer Science. 1-3 Credit Hours.
Advanced Topics in Computer Science
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

CSC 793. RESEARCH PROJECT. 1-6 Credit Hours.
Supervised research project preceding dissertation research for the Ph.D.
Components: LEC.
Grading: GRD.
Typically Offered: Fall & Spring.

CSC 794. Research Project. 1-6 Credit Hours.
Supervised research project preceding dissertation research for the Ph.D.
Components: LEC.
Grading: GRD.
Typically Offered: Fall & Spring.