

DEPARTMENT OF COMPUTER AND INFORMATION TECHNOLOGY

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Programs

- Computer and Information Technology, B.S. (<http://catalog.marshall.edu/undergraduate/programs-az/science/computer-information-technology/computer-information-technology-bs/>)
- Computer and Information Technology, Minor (<http://catalog.marshall.edu/undergraduate/programs-az/science/computer-information-technology/computer-information-technology-minor/>)
- Game Development, Minor (<http://catalog.marshall.edu/undergraduate/programs-az/science/computer-information-technology/game-development-minor/>)
- Web Development, Minor (<http://catalog.marshall.edu/undergraduate/programs-az/science/computer-information-technology/web-development-minor/>)

Courses

 - General Education Course

CIT 163 Intro to Programming: C++ 3 Credit hours

Concepts of software development and maintenance using C++, including syntax of the language, loops, functions, pointers, decision structures, and file processing. Proper program design using object-oriented programming techniques are emphasized.

Grade Mode: Normal Grading Mode

CIT 236 Data Structures 3 Credit hours

Covers fundamental topics of information technology including the concepts of object-orientation, linear data structures, data representation, data manipulation algorithms and their applications, and project participations.

Pre-req: CIT 163 or IST 163.

Grade Mode: Normal Grading Mode

CIT 238 Algorithms 3 Credit hours

Covers algorithm-design methods, algorithm performance analysis, and optimization techniques. Covers algorithm applications used in solving frequently occurring problems, such as pattern matching, data compression, searching, and sorting.

Pre-req: CIT 236 or IST 236.

Grade Mode: Normal Grading Mode

CIT 260 Instrumentation 3 Credit hours

The course introduces students to modern data gathering methods, laboratory instrumentation, and programming. Focuses range from transportation development, forensics, to environmental issues.

Grade Mode: Normal Grading Mode

CIT 263 Web Programming I 3 Credit hours

Students will learn techniques for creating advanced documents and programs for the Web using HTML, DHTML, XML, JavaScript, and PHP scripting. Students will also learn how to install and maintain a Web server.

Grade Mode: Normal Grading Mode

CIT 265 C# NET Programming 3 Credit hours

Covers the essentials for developing robust and secure applications using C#, Windows forms, and the .NET framework. Also covers ADO.NET, writing secure .NET applications and web services.

Pre-req: IST 236 or CIT 236 or CS 120.

Grade Mode: Normal Grading Mode

CIT 266 Applied C++ Programming 3 Credit hours

Designed to teach students intermediate C++ programming through an applied approach with examples and applications. The course extends topics covered in prerequisite courses. Prior programming knowledge in any language required.

Pre-req: CIT 163 with a minimum grade of D or CS 120 with a minimum grade of D.

Grade Mode: Normal Grading Mode

CIT 280 Special Topics 1-4 Credit hours

Grade Mode: Normal Grading Mode

CIT 281 Special Topics 1-4 Credit hours

Grade Mode: Normal Grading Mode

CIT 282 Special Topics 1-4 Credit hours

Grade Mode: Normal Grading Mode

CIT 283 Special Topics 1-4 Credit hours

Grade Mode: Normal Grading Mode

CIT 285 Independent Study 1-4 Credit hours

Independent study for selected freshmen and sophomores under supervision of faculty; may be repeated only once.

Attributes: No Textbook Required

Grade Mode: Normal Grading Mode

CIT 313 Web Programming II 3 Credit hours

The second semester of two course sequence on Web programming. This course focuses on server-side programming and databases. Topics covered include PHP, MySQL, web services, and security.

Pre-req: CIT 263.

Grade Mode: Normal Grading Mode

CIT 332 Software Engineering I 3 Credit hours

Introduction to the industrial process of software systems development. The course covers project management and planning risk management issues; software quality and configuration issues; and processes, methods, and development tools.

Pre-req: CIT 236 or IST 236 or CS 120.

Grade Mode: Normal Grading Mode

CIT 333 Software Engineering II 3 Credit hours

Second course in a two course sequence. Covers the system development life cycle: requirement analysis and specifications; design methods; system implementation and integration; testing; and reuse issues. Team project participation.

Pre-req: CIT 332 or IST 332.

Grade Mode: Normal Grading Mode

CIT 338 CAD and Terra Modeling**3 Credit hours**

Introduction to CAD 2D and 3D principles set in a land modeling format. Data sets will be used to model 3D contours of land and river beds.

Pre-req: IST 423.**Grade Mode:** Normal Grading Mode**CIT 340 Game Development I:2D****3 Credit hours**

Covers computer software industry, history and the role of a creative game development team. Students will participate in the game development process, including art, animation, programming, music, sound and writing.

Pre-req: CIT 236 or IST 236 or CS 120.**Grade Mode:** Normal Grading Mode**CIT 352 Network Protocols and Admin****3 Credit hours**

This course provides students with knowledge of network terminology, structures, topologies, protocols, and inter-faces involving Local Area and Wide Area networks.

Pre-req: CIT 163 or IST 163 or CS 110.**Grade Mode:** Normal Grading Mode**CIT 365 Database Management****3 Credit hours**

To understand the logical and physical design of data stored and retrieved from a relational database. Exposure to distributed databases, database administration and structured query language will also be done.

Grade Mode: Normal Grading Mode**CIT 366 DB Design/Reporting****3 Credit hours**

Introduction to database design, data modeling techniques, advanced queries, and database manipulation concepts. This course helps develop conceptual and organizational skills for planning effective formal database reports.

Pre-req: IST 365 or CIT 365.**Grade Mode:** Normal Grading Mode**CIT 410 Electronic Commerce****3 Credit hours**

This course examines electronic commerce. Group decision making and collaborative applications through the Internet. Develop applications that retrieve and store information in distributed databases.

Pre-req: CIT 365 with a minimum grade of D or IST 365 with a minimum grade of D and CIT 313 with a minimum grade of D.**Attributes:** No Textbook Required**Grade Mode:** Normal Grading Mode**CIT 413 iOS Development****3 Credit hours**

Students will learn to develop iOS applications using HTML5/ PhoneGap, Objective-C, and Swift, using Apple and third-party SDKs. Also covers basic concepts for designing intuitive and usable user-interfaces.

Pre-req: CIT 265.**Grade Mode:** Normal Grading Mode**CIT 414 Android Development****3 Credit hours**

Students will learn to develop Android applications using Java and the Android SDK. Course covers user interfaces, audio integration, SQLite databases, location services, sensors, and custom graphics.

Pre-req: CIT 265.**Attributes:** No Textbook Required**Grade Mode:** Normal Grading Mode**CIT 416 Advanced Web Programming****3 Credit hours**

Includes topics in XHTML, JavaScript Data Object Model, dynamic application of CSS rules to page elements, browser's support for XML, object-oriented PHP programming, server side graphics generation, web services.

Pre-req: CIT 410 with a minimum grade of D.**Grade Mode:** Normal Grading Mode**CIT 440 Computer Graphics for Gaming****3 Credit hours**

Fundamental concepts dealing with the display of graphic information on semi-interactive storage tube displays. The course includes techniques for hidden line display, hidden line removal, and two- and three-dimensional transformation.

Pre-req: CIT 236 with a minimum grade of D or IST 236 or CS 120.**Grade Mode:** Normal Grading Mode**CIT 441 Game Development II:3D****3 Credit hours**

Covers state of the art techniques for computer game design and development with an emphasis on the 3D graphics and interaction through practical, example driven approaches of game development.

Pre-req: CIT 340 or IST 360.**Attributes:** No Textbook Required**Grade Mode:** Normal Grading Mode**CIT 443 Game Development III: AI****3 Credit hours**

Advanced concepts of game development with a focus on artificial intelligence. AI techniques covered including A* path finding algorithm, rule-based reasoning, reinforcement learning, neural networks, genetic algorithm, knowledge representation.

Pre-req: CIT 441 or IST 439.**Attributes:** No Textbook Required**Grade Mode:** Normal Grading Mode**CIT 446 3D Modeling and Animation****3 Credit hours**

Covers 3D modeling to create environments and character animation. Explores 3D forms within sculpture, architecture, animation and games. Includes development of simplifications, abstractions and hyper-realities for gaming.

Attributes: No Textbook Required**Grade Mode:** Normal Grading Mode**CIT 447 Modeling/Simulation Dev****3 Credit hours**

Course applies fundamentals of game development to educational games or simulations within a virtual world. Explores virtual worlds, basic scripting/modeling techniques and role-playing simulations to teach any concept.

Pre-req: CIT 441 with a minimum grade of D.**Grade Mode:** Normal Grading Mode**CIT 448 Mobile Game Development****3 Credit hours**

Students will work in teams to develop games for mobile devices. Emphasis on mobile development tools, techniques, cross platform development, and standard practices, using open-source software.

Attributes: No Textbook Required**Grade Mode:** Normal Grading Mode**CIT 466 Database Programming****3 Credit hours**

This course teaches students database programming available to relational database systems. Students will work with fourth generation languages to analyze, design and develop, and execute programs in a database environment.

Pre-req: CIT 365 or IST 365.**Attributes:** No Textbook Required**Grade Mode:** Normal Grading Mode

CIT 470 🌱 Internship in CIT 3 Credit hours

Capstone course in CIT. A professionally supervised internship within the student's area of emphasis in the Computer and Information Technology major. Must be pre-approved before registering.

Attributes: Capstone Course

Grade Mode: Normal Grading Mode

CIT 480 Special Topics 1-4 Credit hours

Grade Mode: Normal Grading Mode

CIT 481 Special Topics 1-4 Credit hours

Grade Mode: Normal Grading Mode

CIT 482 Special Topics 1-4 Credit hours

Grade Mode: Normal Grading Mode

CIT 483 Special Topics 1-4 Credit hours

Grade Mode: Normal Grading Mode

CIT 485 Independent Study 1-4 Credit hours

Independent study for selected juniors and seniors under supervision of faculty; may be repeated only once.

Attributes: No Textbook Required

Grade Mode: Normal Grading Mode

CIT 490 🌱 Capstone Project in CIT 3 Credit hours

Capstone course in CIT. Students will plan, implement, and present a solution to a real-world problem within their emphasis demonstrating their technical and professional skills. Must be pre-approved before registering.

Attributes: Capstone Course

Grade Mode: Normal Grading Mode

Faculty

Professor

Morgan

Associate Professor

Chahryar

Assistant Professors

Cartwright, Mauro, Mundell