

WEB PROGRAMMING & DATABASE DEVELOPMENT (CWEB), AAS

At Dunwoody College of Technology, the Web Programming & Database Development program provides graduates with the necessary skills and knowledge to design, create, host and maintain web applications. While the goal of user-friendly, efficient, and appealing website design is expected, adherence to industry standards and best practices is paramount. Typical job titles for graduates of the program include web developer, webmaster, database administrator, data analyst, web designer, content manager, software engineer, and software developer.

Students learn full stack web development, which includes both front-end development (client-side scripting; responsive web development; component-based web development; basic user interface and user experience principles) and back-end development (industry-standard database creation and management with multiple database systems; server-side scripting; secure coding practices and programming logic, including object-oriented principles). Students also learn how to configure their application to work with a continuous integration/delivery (CI/CD) pipeline to host application on a variety of cloud-based vendors.

Courses are divided between content lectures and hands-on demonstrations and practice. Interpersonal soft-skills are emphasized in all courses.

Arts & Sciences courses enhance and support the technical coursework.

The program culminates in a comprehensive final/capstone project that incorporates the knowledge learned throughout the program.

Credits earned in the Web Programming & Database Development AAS program directly transfer into Dunwoody's Cybersecurity Bachelor of Science (<https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/computer-technology/cybersecurity-cybr-bs/>) program.

Credential Earned: AAS

Length of Program: 2 years (4 semesters)

Classes Offered: Day on Campus or Evening Online Hybrid

Available Starts: Fall Semester; Spring Semester

Program Outcomes

- Create web solutions using a variety of programming languages.
- Articulate development solutions to peers and supervisors.
- Use appropriate project management strategies for software development.
- Evaluate and implement data structures for applications and business.
- Apply secure programming techniques during development efforts.

Degree Requirements

Code	Title	Credits
General Requirements		
MATH1000	Algebra & Trigonometry	3
MATH1250	Boolean Algebra	3
	Communications	3

Humanities		3
Social Science		3
Technical Requirements		
CLDE1110	Introduction to Cloud Services	2
CDEF1110	Introduction to Cyber Defense	2
CNTS1102	Introduction to Operating Systems	2
CNTS1123	Introduction to Networking	2
CWEB1114	Introduction to Application Dev	2
CWEB1123	Data Fundamentals	2
CNTS1212	Server Systems	3
CNTS1202	Scripting	3
CWEB1115	Programming Fundamentals	3
CWEB1131	Web Tooling	3
CWEB2102	UX/UI Design Fundamentals	3
CWEB2116	Application Design I	3
CWEB2125	Database Systems: Programming and Admin	3
CWEB2140	Continuous Testing	3
CWEB2225	Database Systems: Concept and Design	3
CWEB2226	Application Design II	3
CLDE2292	Summative Experience	3
Total Credits		60

Courses Descriptions

CLDE1110 | Introduction to Cloud Services | Lecture/Laboratory (2 Credits)

Exploration of the technology and terms used in modern cloud services. Portions of this course help to prepare for the Amazon Cloud Practitioner exam.

CDEF1110 | Introduction to Cyber Defense | Lecture/Laboratory (2 Credits)

To provide students with a broad understanding of the field of Cyber defense, inspire curiosity, and set a foundation for more in-depth cybersecurity focused courses in the future.

CNTS1102 | Introduction to Operating Systems | Lecture/Laboratory (2 Credits)

Examine concepts of computer operating systems found in the datacenter. Navigation and manipulating of the file systems using command line and GUI interfaces of current Linux and Windows operating systems to gain an understanding of how they work, their similarities and differences. Portions of this course help to prepare for the CompTia A+ exam.

CNTS1123 | Introduction to Networking | Lecture/Laboratory (2 Credits)

Introduction to the concepts and terminology of data communications in a datacenter. Examine client-server networking, communication hardware, software, and security. Analyze services and models supporting data communications interoperability. Configure and troubleshoot network connections and the associated hardware/software.

CWEB1114 | Introduction to Application Dev | Lecture/Laboratory (2 Credits)

Code responsive, secure web app using HTML, CSS, JavaScript and server-side language while understanding the Software development life cycle and modern development methodologies.

CWEB1123 | Data Fundamentals | Lecture/Laboratory (2 Credits)

Examine the concepts of data and logical structures of data. Explore database types including relational, hierarchical, and graph data structures, and common search algorithms and query structures. Build a relational database using MySQL workbench. Utilize Structured Query Language (SQL) core skills (Queries, operators and keys).

CNTS1202 | Scripting | Lecture/Laboratory (3 Credits)

Apply programming best practices to managing computer systems and networks. Topics include: development of real world scripts used to manage enterprise networks with a focus on Python and PowerShell.

CNTS1212 | Server Systems | Lecture/Laboratory (3 Credits)

Install, configure, maintain, and manage the core services in current Linux and Windows server operating systems. Introduction to the sharing of system resources, remote administration, directory services security and backups. Portions of this course help to prepare for the Microsoft Identity and Access Administrator exam.

CWEB1115 | Programming Fundamentals | Lecture/Laboratory (3 Credits)

Examine programming principles like data types, variables, expressions, operators, Boolean logic, algorithm creation, flowcharts. Topics include: structured programming and programming logic constructs (sequence, selection, and loops); abstraction, modularization, dynamic and static data-structures, object-oriented and event driven programming.

CWEB1131 | Web Tooling | Lecture/Studio (3 Credits)

Use various tools to construct, manage, test, and maintain a web application throughout the life of the application. Explore concepts such as development environments, version control, continuous integration/deployment, testing, hosted environments, and application frameworks.

Prerequisite(s): CWEB1114

CWEB2102 | UX/UI Design Fundamentals | Lecture/Laboratory (3 Credits)

Develop basic Adobe CC software skills. Explore design and user-centered approaches to web development. Model UX/UI best practices in planning, research, prototyping, and user testing.

CWEB2116 | Application Design I | Lecture/Laboratory (3 Credits)

Construct application using modern front-end, back-end frameworks with an emphasis on understanding secure authentication and authorization practices, design patterns, sorting and filtering algorithms and automated unit testing and deployment using a continuous integration tool.

CWEB2125 | Database Systems: Programming and Admin | Lecture/Laboratory (3 Credits)

Create use and manage industry standard Linux and Windows based SQL database servers in a virtualized environment. Utilize Structured Query Language (SQL) advanced skills (Joins, Views and Stored Procedures). Stand up and define database driven web front ends on both Linux and Windows.

CWEB2140 | Continuous Testing | Lecture/Laboratory (3 Credits)

Solidify a firm understanding of DevOps and DevSecOps. Evaluate automation tools that perform Unit, Integration, End-to-End, UI testing. Solidify an understanding of version, securing and feature enhancing code-based through the lens of the Software Development Life Cycle (SDLC) model.

CWEB2225 | Database Systems: Concept and Design | Lecture/Laboratory (3 Credits)

Develop databases to support specific applications; explain database design methodology; use graphical models to document databases (UML, ERD, Data flow, etc.); optimize relational and NoSQL databases using normalization, de-normalization, indexing and ACID principles.

CWEB2226 | Application Design II | Lecture/Laboratory (3 Credits)

Building on knowledge learned from Application Design I, you will create a secure comprehensive full-stack application that implements CRUD(Create, Retrieve, Update, Delete) operations and utilize RESTful Web Service all while ensuring standards are upheld as it relates to usability, accessibility, performance.

CLDE2292 | Summative Experience | Directed Study (3 Credits)

Portfolio or external intern based project work to exhibit all skills gained throughout program.

MATH1000 | Algebra & Trigonometry | Lecture (3 Credits)

Real numbers and polynomials, exponents and radicals, fractional equations; proportions and linear equations; trigonometric functions, solutions of triangles, radians, trig functions graphs, vectors, and basic identities.

General Education: Mathematics

MATH1250 | Boolean Algebra | Lecture (3 Credits)

Binary, octal and hexadecimal number systems. Boolean algebra and mapping.

General Education: Mathematics