SOFTWARE DEVELOPMENT (SWDV)

QUICK FACTS: SWDV COURSES

- **Instructional School:** Science, Technology, and Math
- **Department:** Computer Science

SWDV 105 Introduction to Programming
(4 Credits, Fall)
An introduction to the theory and syntax of an object-oriented programming language. Design, coding, documentation, and critical thinking skills are taught as well as algorithmic problem-solving using top-down (stepwise refinement) techniques. PREREQ: Software Development major and program orientation. PRE/COREQ: SWDV 110 and placement into MATH 123 or concurrent enrollment in any GEM 3 course. *(2 lecture hours, 4 lab hours, 4 credits)*

SWDV 110 Intermediate Programming
(4 Credits, Fall)
This course addresses how to define objects based on class definitions and explores other object-oriented design concepts including inheritance, polymorphism, and exception handling. Additional topics include graphical user interfaces, recursion, and basic searching and sorting algorithms. PREREQ: SWDV 105 with a grade of C or higher. *(2 lecture hours, 4 lab hours, 4 credits)*

SWDV 116 Introduction to Web Application Development
(3 Credits, Fall)
A comprehensive introduction to web development, students learn how to build interactive websites by utilizing HTML for structure, CSS for styling, and JavaScript for dynamic functionality. Students create web pages with features like animations, form validation, and data manipulation, laying the foundation for further front-end development skills. PREREQ: Software Development major and program orientation. *(2 lecture hours, 2 lab hours, 3 credits)*

SWDV 141 Intermediate Web Application Development
(3 Credits, Spring)
This course provides an increased understanding of web development, enabling learners to expand expertise in advanced technologies and frameworks and create professional-grade web solutions. PREREQ: SWDV 105, SWDV 110, and SWDV 116. *(2 lecture hours, 2 lab hours, 3 credits)*

SWDV 152 Systems Analysis and Design
(4 Credits, Fall/Spring)
Examines popular system methodologies to organize the systems development process. Emphasis is placed on techniques to conduct the planning and analysis phases, requirements documentation, test case development, modeling, and prototyping through development of a validated set of requirements. PREREQ: Software Development major or PERM/INST. *(2 lecture hours, 4 lab hours, 4 credits)*

SWDV 210 Introduction to Server-Side Programming
(4 Credits, Fall/Spring)
Introduction to programming using high-level programming language which includes selection statements, loops, arrays, functions, classes, objects, object-oriented design, database access, and server-side frameworks. Other topics include construction, compilation, and debugging of complete programs that demonstrate basic constructs, object-oriented design principles, database access, and server-side programming. PREREQ: SWDV 105, SWDV 110, and SWDV 116. *(3 lecture hours, 2 lab hours, 4 credits)*

SWDV 220 Fundamentals of Database Systems
(4 Credits, Fall/Spring)
Relational database design and data modeling from a conceptual and practical viewpoint. Intermediate SQL language syntax, query design, and database normalization. Data security concepts and integrity with an introduction to query optimization. PREREQ: SWDV 141. *(3 lecture hours, 2 lab hours, 4 credits)*

SWDV 235 Advanced Web Application Development
(4 Credits, Fall/Spring)
Exploring dynamic websites focusing on e-commerce and server-side scripting languages. PREREQ: SWDV 110 and SWDV 220. *(2 lecture hours, 4 lab hours, 4 credits)*

SWDV 265 Mobile Development
(4 Credits, Fall/Spring)
Introduction to mobile development tools, devices, operating systems, and browsers. PRE/COREQ: SWDV 141. *(3 lecture hours, 2 lab hours, 4 credits)*

SWDV 271 Game Development
(4 Credits, Fall/Spring)
Overview and application of development tools for mobile and desktop games, real-time simulations, and visualizations. Emphasis is placed on design, lighting, materials, and animation to build and package playable games. Non-majors who are interested in taking this course will meet with the department chair to discuss eligibility; successful completion of a programming placement test will be required before non-majors are given permission to register. PRE/COREQ: SWDV 105. *(3 lecture hours, 2 lab hours, 4 credits)*

SWDV 275 Software Development Tools and Technology
(4 Credits, Fall/Spring)
Students will gain familiarity and proficiency with software development tools and technologies commonly used in industry. Subjects covered are source control, testing frameworks, continuous integration, dependency management, containers, and project management. PREREQ: SWDV 110. *(2 lecture hours, 4 lab hours, 4 credits)*

SWDV 278 Cloud Platforms and Services
(4 Credits, Spring)
This course explores physical and virtual processors, data storage, Software as a Service (SaaS) and other 'as a service' models, and mobile apps. Students are equipped with a comprehensive understanding of cloud computing, architectures, life cycles, governance, and impact on modern businesses. Attention is given to implementation, data security, and identification of cloud-appropriate applications. *(2 lecture hours, 4 lab hours, 4 credits)*

SWDV 280 Collaborative Development
(3 Credits, Fall/Spring)
Introduction to formal test strategies, collaborative tools, and project management. Serves as a capstone to previous coursework and concepts. Preparation for workforce entry. PREREQ: SWDV 210, SWDV 220, and SWDV 235. *(2 lecture hours, 2 lab hours, 3 credits)*

SWDV 290 Software Development Capstone Internship
(1 Credit, Fall/Spring/Summer)
As a culminating class, this course provides supervised application of technical knowledge and skills in community and business settings to equip students with practical work experience. (Pass/No Pass) PREREQ: PSYC 140 and PERM/INST. *(0 lecture hours, 3 lab hours, 1 credits)*

SWDV 293 Software Development Internship
(1-3 Credits, Varies)
Internships allow students to apply learning to real-life career possibilities. Credits are earned through supervised fieldwork specifically related to a student's area of study. PREREQ: PERM/INST. *(0 lecture hours, 3 lab hours, 1 credits)*

Refer to How to Read Course Descriptions *for an explanation of elements found in the course descriptions above.*