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SR-03-04-54 CC

Marshall University

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CURRICULUM COMMITTEE
RECOMMENDATION

SR-03-04-54 CC

Recommends approval of the listed COURSE ADDITIONS in the following colleges and/or schools:

- **COLLEGE OF FINE ARTS**

  ART 489 Graphic Design Portfolio 2 hours
  This course will cover the preparation of a professional graphic design portfolio for presentation upon graduation. Included will be a resume development, printwork, and multimedia components.
  Co-requisite/Prerequisite: ART 316 or permission.

  ART 491 Graphic Design Workshop 3 hours
  Students in the workshop will engage in actual design problems with non-profit groups or small businesses to gain graphic design experience.
  Co-requisite/Prerequisite: Permission.

- **COLLEGE OF INFORMATION TECHNOLOGY & ENGINEERING and the COLLEGE OF SCIENCE**

  CS 110 Computer Science I 3 hours
  Object-oriented and algorithmic problem solving principles and techniques; programming with classes in an integrated programming environment; and program debugging.
  Co-requisite/Prerequisite: standing as a Computer Science Major; or ACT Mathematics score of at least 23 or SAT Mathematics score of 540.

  CS 120 Computer Science II 3 hours
  Object-oriented analysis and design, advanced programming with classes, arrays, strings, sorting, searching, I/O, GUI development, system life cycle and software development methodologies.
  Co-requisites/Prerequisites: CS 110.

  CS 210 Algorithm Analysis and Design 3 hours
  Data structures including stacks, queues, lists, trees, graphs, priority queues, and dictionaries. Brute force, divide-and-conquer, recursion, greedy, dynamic programming, and backtracking algorithm design techniques.
  Co-requisites/Prerequisites: CS 120 and Math 220.

  CS 280-283 Special Topics in Computer Science 1-4 hours
  Emerging topics in Computer Science.
  Co-requisites/Prerequisites: Permission.

  CS 300 Programming Languages 3 hours
  Comparative study of the concepts found in contemporary programming languages. Emphasis is on design and evaluation of a language in terms of its features and their implementation.
  Co-requisites/Prerequisites: CS 210.

  CS 305 Software Engineering I 3 hours
  Software engineering topics including: Engineering software intensive systems, software engineering paradigms, requirements specification, object-oriented analysis and design, human-
computer interaction, and user interface design. Co-requisites/Prerequisites: CS 210 and ENG 354.

**CS 310 Software Engineering II**
Continuation of CS 305. Software construction, versioning and configuration, testing, change control, software reliability and quality assurance. Co-requisites/Prerequisites: CS 305.

**CS 315 Software Quality Assurance**
Testing techniques and validation of system requirements. Design reviews and code inspections; unit, integration, system, regression, load, stress, user acceptance, and regression testing; statistical testing; test strategies and project metrics. Co-requisites/Prerequisites: CS 310 and MTH 345.

**CS 320 Internetworking**
Principles and issues in interconnecting multiple physical networks into a coordinated system, operation of internet protocols in the interconnected environment, and design of applications to operate in this environment. Co-requisites/Prerequisites: CS 300.

**CS 330 Operating Systems**
Modern operating systems design and implementation: Multi-tasking and time sharing, concurrency and synchronization, interprocess communication, resource scheduling, memory management, deadlocks, I/O, file systems, and security. Co-requisites/Prerequisites: CS 300.

**CS 340 Cyber Security**
Concepts and issues in physical and cyber security; technological vulnerabilities found in operating systems, database servers, web servers, internet, and local area networks; developing defensive and offensive security measures. Co-requisites/Prerequisites: CS 320.

**CS 350 Database Engineering**
Rigorous and comprehensive introduction to relational database theory and applications: data modeling, normalization, transaction processing, relational algebra, SQL, data server internals, query optimization, database programming and internet applications. Co-requisites/Prerequisites: CS 310.

**CS 370 Computer Graphics**
Mathematical theory and practical tools and techniques for generating realistic pictures using computers. This is a project-centered course and involves extensive programming using the OpenGL standard. Co-requisites/Prerequisites: CS 300, MTH 229 and MTH 329.

**CS 420 Distributed Systems**
Study of distributed system concepts and issues, architectures and frameworks for developing distributed applications and future trends. Co-requisites/Prerequisites: CS 305 and CS 320.

**CS 440 Image Processing**
Mathematical techniques, algorithms, and software tools for image sampling, quantization, coding, and compression, enhancement, reconstruction, and analysis. Co-requisites/Prerequisites: CS 310, MTH 229, and MTH 329.

**CS 455 Systems Engineering**
Tools and techniques for optimizing the design and construction of software-intensive systems by considering system issues and making engineering tradeoffs in conflicting criteria and interacting
decision parameters. Co-requisites/Prerequisites: CS 330, CS 340, and CS 350.

CS 460  Multimedia Systems  3 hours
Theoretical and design issues in content-based multimedia information systems and provide an in-depth exposition of retrieval and presentation issues related to various media – text, image, audio, and video. Co-requisites/Prerequisites: CS 350.

CS 475  Internship  3 - 12 hours
An in-depth and hands-on involvement in a real-world project under direct professional supervision. The project may be on-campus or off-campus. Requires prior approval of the internship director, who is a member of the Computer Science faculty. Co-requisites/Prerequisites: CS 310 and Computer Science major with junior/senior standing.

CS 480-483  Special Topics in Computer Science  1 – 4 hours
Emerging topics in Computer Science. Co-requisites/Prerequisites: Permission.

CS 485-488  Independent Study in Computer Science  1 – 4 hours
Emerging topics in Computer Science. Co-requisites/Prerequisites: Permission.

CS 490  Senior Project I  3 hours
Application of technical and professional skills in solving a real-world problem in a team environment. Discuss professional code of conduct, societal issues, and transition from student to industry professional. Co-requisites/Prerequisites: CS 330, CS 340, CS 350, and standing as a Computer Science senior.

CS 491  Senior Project II  3 hours
Senior Capstone experience. Application of technical and professional skills in constructing and testing a real-world problem in a team environment. Co-requisites/Prerequisites: CS 490.

RATIONALE:
Each course is an appropriate addition to the respective programs.

FACULTY SENATE PRESIDENT:
APPROVED
BY SENATE: ___________________________ DATE: 5/11/2004

DISAPPROVED
BY SENATE: ___________________________ DATE: ______________

UNIVERSITY PRESIDENT:
APPROVED: ___________________________ DATE: 5/11/04
DISAPPROVED: ___________________________ DATE: ______________