5-7-2004

SR-03-04-54 CC

Marshall University

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, tress, 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, reguirements 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 3 hours
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 3 hours
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 3 hours
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 3 hours
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 3 hours
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 3 hours
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 3 hours
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 3 hours
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 3 hours
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 3 hours
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: Larry Stickler DATE: 5/7/2004

DISAPPROVED
BY SENATE: _____ DATE: _____

UNIVERSITY PRESIDENT:

APPROVED: _____ DATE: 5/11/04

DISAPPROVED: _____ DATE: _____

COMMENTS: _____