



JM BIBLE COLLEGE *King David School Of Computer Science*

"Be still, and know that I am God; I will be exalted among the nations, I will be exalted in the earth."



Mission Statement:

Our mission is to open channels of creativity that inspire and educate the next generation while enabling them to problem solve issues yet unknown and to apply knowledge in computer and information sciences. We shall use unconventional methods in finding solutions that can be tested

JM Bible College - ONLINE will offer Bachelor degrees from the *school of Computer Science* while electives can be offered by the schools of Theology, Accounting, Business Administration, Tourism and Environmental Sciences, Agriculture, Education, Health Administration and Psychology. Based in the United States in a joint effort with countries such as Japan, Israel, and Kenya among others, the college will address the needs of its students worldwide.

JM Bible College will serve and increase enrollment capacity of Education entrants worldwide by educating and preparing students for productive careers in public and private sectors through online and distance education. The College will positively contribute to the evolving needs of society by removing barriers that restrict access and success in higher education, especially for those underserved and non-traditional groups that make up an ever-growing proportion of the population.

The vision of the institution is to chart a balanced Christian Life that is fulfilling by way of Christian education and a mindset that seeks to optimize on God given talents and abilities. The College will admit High School Graduates and other are encouraged to live life the bible way. Our curriculum is designed to shorten and training period by eliminating redundant

prerequisites, in order to increase job training opportunities that leverage for permanent employment

Academic Regulations

FIRST YEAR or FRESHMAN REQUIREMENTS

Freshman admissions will be based on the most qualified applicants. Applicants are required to submit a high school transcript showing completion of the following four credits: English, mathematics, Sciences, Social Sciences, and Literature Applicants from unaccredited high schools may be required to pass validating examinations.

Academic Calendar

Registration	June 15 – July 15, 2012 the cost is \$50.00	
All	The first day of instruction for structured term.	August 6, 2012
All	Cancellation of Enrollment – partial refund.	August 13, 2012
All	Deadline for enrollment prior to \$100 late registration fee.	August 20, 2012
All	videoconference course request	August 20, 2012
All	Classes begin	August 20, 2012
All	Final examinations begin.	Professors/Admin
All	Final Grades available with official transcripts	TBD

Undergraduate Courses

[Click Here to View the Prerequisite Hierarchy](#)

C001 - Computer Programming I (4cr hrs)

P: MATH-M 014 or equivalent or a Level III on the Math Placement exam. Fundamental concepts of computer programming, algorithm development, and data structuring. The programming language used will be C++.

C002 - Multiuser Operating Systems (2 cr.)

P: C101. Survey of the operating system facilities and commands. Installation and maintenance of operating systems such as Linux. Understanding process management, file systems, memory and virtual memory management issues. Understanding networking and its role in modern computing environment. Operating system security. Writing shell scripts and batch files.

C200 - Computer Programming II (4 cr.)

P: C101. Fundamental forms and concepts of computer science, including top-down design, data structures, structured control flow, modular programming, object-oriented

programming, recursion, and standard algorithms. Programming language concepts will be illustrated with C++.

C201 - Introduction to Data Structures (4 cr.)

P: C151, C201, MATH-M 125 or above. Abstract data types and their implementations using various structures and algorithms; elementary algorithm analysis; space/time trade-offs; sorting and searching; finite graph algorithms.

C202 - Foundations of Digital Computing (3 cr.)

A course in calculus. Mathematical foundations of computing, including mathematical induction, propositional logic, proofs of correctness, Turing machines, computability, and the halting problem.

C300 - System Analysis and Design (4 cr.)

P: C243. Software development life cycle; structured top-down and bottom-up design; data flow diagramming; entity relationship modeling; study of computer aided software engineering; I/O design and validation; file and database design; design of user interfaces; comparison of structured vs. object oriented design. A team project will be completed.

C301 - Organization of Programming Languages (3 cr.)

Design and implementation of programming languages: syntax; semantics; comparison of programming paradigms such as imperative, functional, logic, and object-oriented. Implementation of concepts such as binding, scope, looping, branching, subprograms and parameter passing, tasks and concurrency, heap management, exception handling, templates, inheritance, overloading.

C302 - Computer Structures (4 cr.)

P: C201. Computer architecture and machine language; internal data representation; symbolic coding and assembly systems; macros; program segmentation and linking; I/O devices; serial communication. Projects to illustrate basic machine structure and programming techniques.

C401 - Operating Systems (4 cr.)

Design and implementation of operating systems: the process model, process synchronization, semaphores, deadlock management, multi-tasking, multi-threading, interprocess communication, process scheduling, memory management, paging, segmentation, virtual memory management, file system design and implementation, I/O device drivers, interrupt handlers and spoolers. Students will complete the design and implementation of a simulated multi-tasking operating system.

C402 - Database Systems (3 cr.)

The fundamental concepts, theory, and practices in the design and implementation of database management systems: data independence; data modeling; entity relationship modeling; functional dependencies; normalization; relational, hierarchical, network, and object oriented data models; relational algebra; relational calculus; data definition and manipulation languages; recovery; concurrency; security; integrity of data.

C403 - Analysis of Algorithms (3 cr.)

Mathematical analysis of time and space requirements for algorithms, using combinatorics, recurrence relations, and elementary probability theory. Advanced graph algorithms. Tractable and intractable problems.

C403 - Artificial Intelligence (3 cr.)

Techniques and principles of artificial intelligence and implementations of some of these techniques. Various formalisms for representing knowledge, and relationships of this to such tasks as inference, game playing, and planning. Machine learning.

C404 - Seminar in Computer Science (1-3 cr.)

Special topics in computer science. Recent topics have included Embedded Systems, Game Programming and Design, Biomorphic Computing, Computer Security, Advanced Java Techniques.

INT405 - Internship - Professional Practice (3 cr.)

Enrollment requires that the student be accepted as a temporary employee of an organization or business. The work must offer the student challenging computer experience in a closely supervised position. The student will report weekly to the faculty member in charge. Prior approval of the position is required.

APPLY500 - Problem Solving Using Computers (4 cr.)

This course introduces problem solving techniques, critical thinking skills, algorithm development and computer programming using real-world problems. Topics include: computer literacy, hardware, data representation, structured and object-oriented programming techniques, modularity and reusability, and testing and debugging techniques.

B406 - Parallel and Distributed Programming (3 cr.)

Overview of parallel computers, shared memory, message passing, MIMD and SIMD classifications. Understanding and use of message passing and synchronization facilities

such as MPI. Study of parallel programming models such as master-slave, client-server, task-farming, divide-and-conquer and pipelining. Performance analysis of parallel systems, execution time, time complexity, load balancing and scalability.

B407 - Computer Networks (3 cr.)

Fundamental concepts and technologies used in design of computer networks. Architecture and design philosophy of Internet and basic performance issues. Low-level technologies like Ethernet and wireless. Packet switching and virtual circuits. Core protocols of the Internet, such as TCP and IP. Error control, congestion control, and routing.

B408 - Security in Computing (3 cr.)

An introduction to computing security to include confidentiality, integrity, and availability triad, cryptography, software security, operating system security, trusted operating system design and evaluation, authentication, network threats and defenses, security management, legal aspects of security, privacy and ethics.

B409 - Interactive Computer Graphics (3 cr.)

Computer graphics techniques. Introduction to graphics hardware and software. Two-dimensional graphics methods, transformations, and interactive methods. Three-dimensional graphics, transformations, and viewing geometry. Three-dimensional modeling and interactive manipulation methods. Basic lighting and surface shading. Introduction to video and animation methods.

Graduate Courses

A504 - Introductory C++ Programming (2 cr.)

Programming Experience. Fundamental concepts of computer programming, algorithm development, and data structuring. The programming language used will be C++

A506 - Object-Oriented Programming in C++ (2 cr.)

Topics include objects, classes, encapsulation, inheritance, polymorphism, templates and exceptions.

A507 - Computer Structures (3 cr.)

Computer architecture and machine language; internal data representation; symbolic coding and assembly systems; macros; program segmentation and linking; I/O devices; serial communication. Projects to illustrate basic machine structure and programming techniques.

A508 - Data Structures (3 cr.)

Abstract data types and their implementations using various data structures and algorithms; advanced features of C++; elementary algorithm analysis; space/time trade-offs; sorting and searching; introduction to object oriented design and programming; software engineering principles.

509 - Algorithms Design and Analysis (3 cr.)

Models, algorithms, recurrences, summations, growth rates. Probabilistic tools, upper and lower bounds; worst-case and average-case analysis, amortized analysis, dynamization. Comparison-based algorithms: search, selection, sorting, hashing. Information extraction algorithms (graphs, databases). Graph algorithms: spanning trees, shortest paths, connectivity, depth-first search, breadth-first search.

B510 - Parallelism in Programming Languages and Systems (3 cr.)

Overview of parallel computers, shared memory, message passing, MIMD and SIMD classifications. Understanding and use of message passing and synchronization facilities such as MPI. Study of parallel programming models such as master-slave, client-server, task-farming, divide-and-conquer and pipelining. Performance analysis of parallel systems, execution time, time complexity, load balancing and scalability.

511 - Networks and Distributed Computing (3 cr.)

Advanced concepts and technologies of computer networks. Protocols and protocol stacks. Client-server models. Distributed object technology. High-performance and high-bandwidth techniques. Distributed operating systems.

512 - Elements of Artificial Intelligence (3 cr.)

Introduction to major issues and approaches in artificial intelligence. Principles of reactive, goal-based, and utility-based agents. Problem-solving and search. Knowledge representation and design of representational vocabularies. Inference and theorem proving, reasoning under uncertainty, and planning. Overview of machine learning. Graduate project.

513 - Biomorphic Computing (3 cr.)

Biologically-inspired approaches to the design of intelligent systems. Distributed and perceptually-grounded representations. Temporal processing. Neural-network approaches to vision and natural language processing. Evolutionary computation.

Additional topics may include an introduction to analogy computing, dynamical systems, and artificial life.

514 - Advanced Database Concepts (3 cr.)

Database models and systems: specially relational and object-oriented; relational database design theory; structures for efficient data access; query languages and processing; database applications development; views. Transaction management: concurrency and recovery.

515 - Software Engineering I (3 cr.)

Analysis, design and implementation of software systems. Requirements specification: data and process modeling. Software design methodologies. Software quality assurance: testing and verification. Software development processes.

516 - Advanced Computer Graphics (3 cr.)

Introduction to graphics hardware and software. Two-dimensional graphics methods, transformations, and interactive methods. Three-dimensional graphics, transformations, viewing geometry, object modeling and interactive manipulation methods. Basic lighting and shading. Video and animation methods. A sampling of research papers and a project in computer graphics form a substantial portion of this course.

517 - Image Synthesis (3 cr.)

Raster image display: color theory, gamma correction, and filtering. Advanced shading methods: local illumination models, global illumination models. Surface display, including ray tracing and Z-buffering. Solid modeling; spline surfaces, CSG, superquadrics, and deformations. Scientific visualization: isosurfaces and volume rendering.

Programming and Design (3 cr.)

Programming techniques and data structures for game implementation, elements of game design, current trends in the game industry, game theory, social aspects, and elements of artificial intelligence in games.

600 - Topics in Systems (1-6 cr.)

Research topics in systems

601 - Natural Language Processing (3 cr.)

Theory and methods for natural language processing. Algorithms for sentence parsing and generation. Context-free and unification grammars. Question-and-answer systems. Analysis of narratives. Finite-state approaches to computational phonology and morphology. Machine translation. Machine learning of natural language. Speech recognition. Neural-network and statistical alternatives to symbolic approaches.

602 - Computer Vision (3 cr.)

Concepts and methods of machine vision as a branch of artificial intelligence. Basics of digital image processing. Local and global tools for deriving information from image data. Model-based object recognition and scene understanding.

603 - Database Theory and Systems Design (3 cr.)

Database models: relational, deductive, complex-object, object-oriented. Query languages: relational algebra and calculus, datalog, fixpoint logics, object-oriented query languages. Transaction management theory: concurrency control, recovery, distribution. Post-relational and object-oriented database systems.

604 - Topics in Graphics and Human Computer Interaction (1-6 cr.)

Special topics in graphics and human computer interaction.

700 - Graduate Independent Study (1-6 cr.)

Independent study under the direction of a faculty member, culminating in a written report. May be repeated for credit. R grade not allowed. The different departmental options for independent study are: Research and Reading, Software System Development, Master's Research Project, Master's Software Project, and a University Master's Thesis.

800 - Professional Practicum/Internship (Non-credit.) Requirements

Practicum provides for participation in training and internship

TUITION FEES

Online Bachelor's Degree Program Tuition Rates		
Cost Per Credit	Cost Per Course (3 Credits)	Cost Per Degree (without a scholarship) most students will receive a scholarship
\$600	\$1,800	Students need 120 credits to graduate Estimated cost for student with 30 transfer credits: \$39,500 + Fees

Link to: **Registration and Application Form**