Information Technology Advisory Meeting

Fall 2019 Invitation

Dear «fname»,

The Information Technology faculty at M State (Minnesota State Community and Technical College) invites you to our advisory meeting. The meeting is **September 23, 2019 @ 6:30 pm in room B150** (somewhat near door N3) or through Zoom. Please contact us if you wish to have a campus map with the room numbers or more information about joining using remote conferencing technology.

The Advisory Meeting consists of Information Technology professionals guiding the curriculum and instructional direction of our Information Technology programs. Our current program offering is Computer Programming – AAS, Information Technology – AS, Cybersecurity – AAS, Cybersecurity – Certificate and Cisco - Certificate. Please contact us if you wish to have a copy of any or all of our curriculum offerings.

We very much need your input to our programs. We would be grateful for a reply to this invitation, so we may accurately plan enough food for the meeting. You may extend this to other professionals you think would help us improve our curriculum and instruction. The meeting agenda is below and with additional information at <http://brazil.minnesota.edu/advisory/advisory.html#Current_Meeting_Agenda__Minutes> .

We look forward to seeing you.

Yours,

Minnesota State Community and Technical College Information Technology Faculty

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**Agenda for Fall 2019**

* MSCTC/M State welcome and updates
  + Communications Check (Audio and Video)
  + Additions/approval of agenda
    - *M State is requesting more input from advisory committees. What topics would the members wish to discuss?*
  + Approval of last meeting minutes
  + Introductions and membership list updates
    - *Note: MState recommends a sign in sheet. Please bring or send a business card so we may populate the sign in sheet, thank you.*
* Chair/Vice Chair discussion/elections
  + *Vice Chair progress report*
* Discussion of Industry Trends
  + Review ACM curricula recommendations
    - Which programs should focus on which parts of the recommendations?
    - Remember, the recommendations are for four-year degrees. An M State program could accomplish almost half.
  + Advisory Group Comments
  + Survey Link for the meeting
    - <https://forms.office.com/Pages/ResponsePage.aspx?id=xscRULQKq0ae9PrnSpIaf96L05-GPe1JurSsvJBSLw9UOEJSUEZMMENGSjRBVzdGMDBGVlpTNUYzVS4u>
* Program Updates/Changes since last meeting
  + Computer Programming – AAS
    - <http://brazil.minnesota.edu/curr/CP_AAS_2017.pdf>
    - Outcome Review
  + Information Technology Database Administration – AAS
    - <http://brazil.minnesota.edu/curr/IT_database_fall2017.pdf>
    - Outcome Review
  + Cybersecurity – AAS
    - <http://brazil.minnesota.edu/curr/cybersecurity_AAS_fall2019.pdf>
    - Outcome Review
  + Information Technology – AS
    - <http://brazil.minnesota.edu/curr/IT_AS_fall2017.pdf>
    - Outcome Review
    - Survey Link for the meeting
      * <https://forms.office.com/Pages/ResponsePage.aspx?id=xscRULQKq0ae9PrnSpIaf96L05-GPe1JurSsvJBSLw9UOVJLSEFQV0U5TU9JU01JNzEwVTBWWUUyRi4u>
  + Cybersecurity – Certificate
    - <http://brazil.minnesota.edu/curr/cybersecurity_certificate_fall2019.pdf>
    - Outcome Review
  + Cisco Certificate
    - <http://brazil.minnesota.edu/curr/cisco_fall2012.pdf>
    - Cisco Academy curriculum change
* Course and Program Plan Review
  + Note: MState recommends advisory committee setup a rotating schedule for reviewing course and program plans.
* Program Outcome Review
  + Note: MState recommends advisory committee setup a rotating schedule for reviewing program outcomes.
* Program Needs
  + Partnerships
  + Equipment
  + Recruitment
  + This is a call for Internships and entry-level job opportunities for M State students.
* College update
* Other
* Next Meeting Date

Actions Items

Advisory Member Functions (MSCTC Advisory Committee Guide)

* Identify specific subject areas of program inclusion
* Prioritizing the recommend subject areas
* Specifying appropriate program content level
* Reviewing program outcomes on an ongoing basis
* Assessment of program quality
* Specifying appropriate foundational skill standards for local needs
* Identifying general education and related technical skills needed by graduates
* Recommending equipment to support the program content

ACM Curricula Recommendations

* + IT2017 Essential Only Domains
    - Information Management
      * Tools and techniques for efficient data modeling, collection, organization, retrieval, and management
      * How to extract information from data to make data meaningful to the organization.3.How to develop, deploy, manage and integrate data and information systems to support the organization.
      * Safety and security issues associated with data and information.
      * Tools and techniques for producing useful knowledge from information
    - Integrated Systems Technology
      * Scripting languages, their uses and architectures
      * Application programming interfaces
      * Programming practices to facilitate the management, integration and security of the systems that support an organization
    - Platform Technologies
      * Comparison of various operating systems available, including their respective characteristics, advantages and disadvantages
      * Selection, deployment, integration and administration of platforms or components to support the organization’s IT infrastructure
      * Fundamentals of hardware and software and how they integrate to form the essential components of IT systems
    - System Paradigms
      * Skills and tools to gather requirements, source code development, evaluation and integration of components into a single system, and system validation
      * Design, selection, application, deployment, and management of computing systems to support an organization
      * Skills and concepts essential to the administration of operating systems, networks, software, file systems, file servers, web systems, database systems, and system documentation, policies, and procedures
      * Fundamentals of project management and the interplay between IT applications and related organizational processes
      * System integration issues, including integration in a system of systems and federation of systems, role of architectures in systems integration, performance and effectiveness
      * Education and support of users of computing systems
    - User Experience Design
      * Understanding of advocacy for the user in the development of IT applications and systems
      * Development of a mind-set that recognizes the importance of users, context of use, and organizational contexts
      * Employment of user-centered methodologies in the design, development, evaluation, and deployment of IT applications and systems4.Application of evaluation criteria, benchmarks, and standards
      * User and task analysis, human factors, ergonomics, accessibility standards, experience design, and cognitive psychology
  + IT2017 Essential +Supplemental
    - Cybersecurity Principles / Cybersecurity Emerging Challenges
      * A computing-based discipline involving technology, people, information, and processes to enable assured operations
      * A focus on implementation, operation, analysis, and testing of the security of computing technologies
      * Recognition of the interdisciplinary nature of the application of cybersecurity including aspects of law, policy, human factors, ethics, and risk management in the context of adversaries
      * The practice of assuring information and managing risks related to the use, processing, storage, and transmission of information or data and the systems and processes used for those purposes.
      * Measures that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation
      * The emerging challenges in a computing-based discipline involving technology, people, information, and processes to enable assured operations and to support the growing need for forensic activities in a contest, adversarial environment
      * Security considerations of cloud computing
      * Digital forensics including the recovery and investigation of material found in digital devices, often in relation to computer crime.
      * Security implications for information technologies enabled and controlled by software and influenced by the supply chain
    - Global Professional Practice / Social Responsibility
      * Importance of identifying and understanding essential skills required for a successful career within the industry, including professional oral and written communication skills.
      * Identification of ways teamwork integrates throughout IT and ways IT supports an organization
      * Social and professional contexts of information technology and computing, and adherence to ethical codes of conduct
      * Social, governmental regulations and environmental context of IT and computing
      * Importance of Team Dynamics, Ethics and Professionalism to an organizations success
      * Information Technology and the role of Risk Management
      * Energy Management and Standards leading to “Green Computing”
    - Networking / Applied Networks
      * Topology of ad hoc and fixed networks of all sizes
      * Role of the layered model in standards evolution and interoperability
      * Physical layer through routing layer issues
      * Higher layers related to applications and security, such as functions and design
      * Approaches to designing for and modeling latency, throughput, and error rate
      * Purpose and role of proprietary network protocols, and comparing proprietary networks with open standard protocols
      * Protocols and languages in network programming; socket-based network application programs design and implementations
      * Components of Voice over IP (VoIP) networks and protocols, and configurations of voice gateways for supporting calls using various signaling protocols
      * Scientific field routing and protocols in the internet, IPv6 and the internet protocol of the future
      * Basic mobile network architectures and protocols used in wireless communications
    - Software Fundamentals / Software Development and Management
      * Skills and fundamental programming concepts, data structures, and algorithmic processes
      * Programming strategies and practices for efficient problem solving
      * Programming paradigms to solve a variety of programming problems
      * Software process models and software project management
      * Software development phases: requirements and analysis, design and construction, testing, deployment, operations, and maintenance
      * Modern software development and management platforms, tools, and services
    - Web and Mobile Systems / Mobile Applications
      * Web-based applications including related software, databases, interfaces, and digital media
      * Mobile applications including related software, databases, interfaces, and digital media
      * Contemporary web technologies, social media
      * Mobile application technologies with experiences to create mobile applications
      * Mobile architectures, including iOS and Android
      * Creation of mobile applications on different platforms
      * Evaluation and performance improvement of mobile applications
      * Designing friendly interfaces for mobile applications
  + IT2017 Supplemental Only
    - Cloud Computing
      * Cloud computing paradigm
      * Cloud computing fundamentals, security principles, and applications
      * Theoretical, technical, and commercial aspects of cloud computing
      * Architecture and cloud software development
      * Emerging technologies and existing cloud-based infrastructure
    - Data Scalability and Analytics
      * Key technologies used in collecting, cleaning, manipulating, storing, analyzing visualizing, and extracting useful information from large and diverse data sets
      * Data mining and machine learning algorithms for analyzing large sets of structured and unstructured data
      * The challenges of large scale data analytics in different application domains
    - Internet of Things
      * Basic knowledge and skills to engage in innovative design and development of IoT solutions
      * Trends and characteristics in the IoT field
      * Analysis of challenges and application patterns for user-interaction in IoT settings
      * IoT effects for signal processing, data acquisition, and wireless sensor networks
      * Relationships between IoT and intelligent information processing
      * Internet operations compared with internet of things operations
    - Virtual Systems and Services
      * Virtualization and its related open source components
      * Deployment skills to build virtualization and clustered solutions
      * Networked storage for virtualization infrastructure needs
  + URL
    - <https://www.acm.org/binaries/content/assets/education/curricula-recommendations/csec2017.pdf>
  + CSEC2017 Knowledge Units
    - Data Security
      * Basic cryptography concepts
      * Digital forensics
      * End-to-end secure communications
      * Data integrity and authentication
      * Information storage security
    - Software Security
      * Fundamental design principles including least privilege, open design, and abstraction,
      * Security requirements and their role in design,
      * Implementation issues,
      * Static and dynamic testing,
      * Configuring and patching, and
      * Ethics, especially in development, testing and vulnerability disclosure
    - Component Security
      * Vulnerabilities of system components,
      * Component lifecycle,
      * Secure component design principles,
      * Supply chain management security,
      * Security testing, and
      * Reverse engineering
    - Connection Security
      * Systems, architecture, models, and standards,
      * Physical component interfaces,
      * Software component interfaces,
      * Connection attacks, and
      * Transmission attacks.
    - System Security
      * Holistic approach,
      * Security policy,
      * Authentication,
      * Access control,
      * Monitoring,
      * Recovery,
      * Testing, and
      * Documentation
    - Human Security
      * Identity management,
      * Social engineering,
      * Awareness and understanding,
      * Social behavioral privacy and security, and
      * Personal data privacy and security
    - Organizational Security
      * Risk management,
      * Governance and policy,
      * Laws, ethics, and compliance, and
      * Strategy and planning
    - Societal Security
      * Cybercrime,
      * Cyber law,
      * Cyber ethics,
      * Cyber policy and
      * Privacy
    - URL
      * <https://www.acm.org/binaries/content/assets/education/curricula-recommendations/csec2017.pdf>