Master of Science in Internet Engineering

The Master of Science degree in Internet Engineering (MSIE) is a 30-credit graduate program designed to fill the need for network professionals who know how to build new networks or migrate existing networks onto platforms based primarily on transfer control protocol/Internet protocol (TCP/IP) technology. The convergence of separate voice, data, message switch and video networks onto a single, network based platform using TCP/IP technology has been underway for several years. Technology advances are driving this trend, and have enabled quality telephone services from voice over-the-internet protocol, broadband services proliferation, and mobile access over wireline and wireless facilities. Small and large organizations alike must get more from their information technology (IT) dollars in order to remain competitive. Companies with existing full-featured networks functioning and in place are faced with either integrating their existing IT infrastructure onto a TCP/IP-based solution, or to discard their current IT infrastructure entirely and replace it with a new, TCP/IP-based network. The MSIE degree program prepares students to select the best alternatives from these two scenarios, and all permutations in between. Network reliability, survivability, and outage recovery design techniques are also featured in the program, as is the practical use and integration of wireless networks. Network security is also taught and practiced throughout the degree program.

- Online course delivery with audio – using VoIP
- Real-time lectures in the evening – recorded for later playback
- No resident requirement – earn your degree from home or on the road
- Transfer up to 6-credits of equivalent graduate coursework

MSIE CURRICULUM (30 credits)

Required Core Courses (27 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE-701</td>
<td>Principles of Designing and Engineering Computer Networks</td>
</tr>
<tr>
<td>IE-703</td>
<td>Thin and Fat Client Deployment</td>
</tr>
<tr>
<td>IE-705</td>
<td>Comparison of Operating Systems &amp; Web Servers</td>
</tr>
<tr>
<td>IE-707</td>
<td>Network Architecture Convergence Using Wireless Technology</td>
</tr>
<tr>
<td>IE-709</td>
<td>Comparison of Object-Oriented and Scripting Languages</td>
</tr>
<tr>
<td>IE-712</td>
<td>Design and Practice of Secure Information Networks</td>
</tr>
<tr>
<td>IE-713</td>
<td>Multimedia and Web Casting</td>
</tr>
<tr>
<td>IE-715</td>
<td>Identifying and Integrating Component Collaboration Technologies</td>
</tr>
<tr>
<td>IE-717</td>
<td>Invention, Innovation, and the Use of Intellectual Property</td>
</tr>
</tbody>
</table>

Capstone Course (3 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE-719</td>
<td>Capstone Course</td>
</tr>
</tbody>
</table>

For more information, contact:
Office of Admissions
800-950-1992
gradadmit@capitol-college.edu
Capitol College
11301 Springfield Road, Laurel MD 20708
www.capitol-college.edu
IE-701 Principles of Designing and Engineering Computer Networks (3 credits)
Networking and the Internet have introduced us to a new set of devices and protocols that link personal computers to servers, and servers to servers. This course explores all the hardware and software that drives local and Internet computing. Special emphasis on connectivity and throughput is explored. Offered in the 8-week summer term II.

IE-703 Thin and Fat Client Deployment (3 credits)
Computing has moved from dumb terminals connected to mainframes via RS232 cable to personal computers where the application runs locally and connects to remote data or where applications and data run on a remote server and viewed through a web browser. To examine this shift and to understand the technologies involved, this course focuses on what is now called thin client and fat client computing and the new mechanisms employed to bring legacy computing to the information economy. Offered in the 8-week spring term I.

IE-705 Comparison of Operating Systems and Web Servers (3 credits)
This course explores the operating software underlying Internet and intranet computing. The similarities and differences between operating systems and web servers are investigated with a view to choosing the best technology and optimization practices. Topics include NT, 2000 Server, Advanced Server, Windows CE, Unix and versions, Linux, IIS, Apache, third party, and public domain. Offered in the 8-week fall term II.

IE-707 Network Architecture Convergence Using Wireless Technology (3 credits)
Today's users need access to information at all times and from any location. Such access is provided through the use of wireless technologies communicating with small devices that can be easily carried in a pocket or stuck to the dashboard of an automobile. This course focuses on the hardware, software and technical issues that make such access possible. Topics include wireless protocols (SM, GPRS, WAP, and I-Mode), global wireless vs. U.S. standards. Mobile computing, cell phones and wireless net, comparison of various PDA and handheld devices, the wireless spectrum. Mobile processors, review and comparison of wireless appliances for business, automobiles, and home. Offered in the 8-week spring term I.

IE-709 Comparison of Object-Oriented and Scripting Languages (3 credits)
For the first time in two decades, software developers now have to be proficient in multiple programming languages to deploy thin client or fat client Internet-based applications. Choosing the right set of languages has a dramatic impact on application performance and e-commerce. This course is designed to compare and contrast the various language tools for crafting Internet-based and web-based applications. Offered in the 16-week summer semester.

The anticipated timing and schedule of course offerings is subject to review and may change.

IE-712 Design and Practice of Secure Information Networks (3 credits)
This course will examine Internet security concerning two key network design issues: information security and information privacy. Students will learn and understand the technical tools to protect information from external compromise; internal and external threats; various network security technologies and protection systems; application of network design techniques capable of providing information security to local and wide-area networks; general information encryption techniques and protocols including symmetric and asymmetric cryptographic methodologies, one-way hashes and digital signatures, secure sockets layer and Internet Protocol Security (IPSEC). Students will learn to evaluate and create corporate policies regarding privacy and information network security. Offered in the 16-week fall semester.

IE-713 Multimedia and Web Casting (3 credits)
The Internet and increased bandwidth management technologies has brought us a new venue to communicate with each other in either full-duplex, half-duplex, or simplex modalities. Dot-com companies present us with radio stations, on-demand streaming audio and video, and live casting of audio and video. To understand the integration, deployment, and optimization of these technologies, this course compares technical aspects, market positioning, and strengths and weaknesses of various media products in the market. Offered in the 8-week spring term II.

IE-715 Identifying and Integrating Component Collaboration Technologies (3 credits)
Software and hardware companies have utilized a component approach to product development in order to address the requirement that Internet and intranet communications applications operate in an on-demand mode. This is the technical underpinning of the “anywhere, anytime” mantra of the Internet. However, these components do not always integrate easily. This course identifies the various component technologies, standards, and issues with integration to provide on-demand communication capabilities. Offered in the 16-week fall semester.

IE-717 Invention, Innovation and the Use of Intellectual Property (3 credits)
The Internet’s ability to share ideas among millions of people instantaneously, and the ability of Internet users to improve upon those ideas and share them with everyone on the Internet instantaneously, has challenged intellectual property’s status quo. While lawmakers and intellectual property owners struggle with this challenge, others such as Linux and Napster seek to test the new paradigm. This course will examine the legal and regulatory limits of an e-business’ ability to exploit intellectual value in the new paradigm. In addition, the latest changes to intellectual property law and regulation as a result of Internet commerce will be examined. Offered in the 8-week spring term II.

IE-719 Capstone Course (3 credits)
The capstone course is in graduate seminar format. Students will integrate the prior course work and personal experiences into a major paper or a project. Offered in the 16-week spring semester.