

## School of Computing and Information Sciences

**Course Title:** Web Application Programming

**Date:** November 22, 2019

**Course Number:** COP 4813

**Number of Credits:** 3

<b>Subject Area:</b> Application Development	<b>Subject Area Coordinator:</b> Kip Irvine <b>email:</b> irvinek@cs.fiu.edu
<b>Catalog Description:</b> Programming of server-side Web applications with databases, state management, security, error handling, and Web services.	
<b>Textbook:</b> Beginning ASP.NET 3.5, Imar Spaanjar, Wiley Publishing, Indianapolis, 2008.	
<b>References:</b>	
<b>Prerequisites Courses:</b> CGS 4854	
<b>Corequisites Courses:</b> None	

Type: Elective (IT Application Development concentration)

Prerequisites Topics:

- Master classes and objects in multitier applications
- Master structured exception handling and interactive error trapping
- Be familiar with data-bound controls and database application programming interface
- Master client/server communication
- Be familiar with use of CSS 1 style sheets

Course Outcomes:

1. Master creating Web applications
2. Master interfacing Web applications with multiuser databases
3. Master commonly used Web server controls
4. Be familiar with error handling and input validation in Web applications
5. Master maintaining state in Web applications.
6. Be exposed to creating and consuming Web services
7. Be exposed to client-side scripting languages
8. Be familiar with user authentication and authorization techniques
9. Be exposed to Web-based reports

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**Outline**

<b>Topic</b>	<b>Number of Lecture Hours</b>	<b>Outcome</b>
<ul style="list-style-type: none"> <li>• Introduction to Web-based application architecture               <ul style="list-style-type: none"> <li>○ Concepts</li> <li>○ Client-server model</li> <li>○ Page state</li> <li>○ Multi-tier design</li> </ul> </li> </ul>	3	1
<ul style="list-style-type: none"> <li>• Web server controls               <ul style="list-style-type: none"> <li>○ Text and buttons</li> <li>○ List-oriented</li> <li>○ Template-based</li> </ul> </li> </ul>	9	1, 3
<ul style="list-style-type: none"> <li>• Designing Web interfaces               <ul style="list-style-type: none"> <li>○ Design principles</li> <li>○ Layout techniques</li> <li>○ Cascading style sheets</li> <li>○ XHTML basics</li> </ul> </li> </ul>	6	3
<ul style="list-style-type: none"> <li>• Error Handling and Input Validation               <ul style="list-style-type: none"> <li>○ Guidelines and principles</li> <li>○ Web validation controls</li> </ul> </li> </ul>	3	4
<ul style="list-style-type: none"> <li>• Client-side programming               <ul style="list-style-type: none"> <li>○ Scripting languages</li> </ul> </li> </ul>	3	7
<ul style="list-style-type: none"> <li>• User authentication and authorization               <ul style="list-style-type: none"> <li>○ Principles</li> <li>○ Server controls</li> <li>○ Role-based authorization</li> </ul> </li> </ul>	3	8
<ul style="list-style-type: none"> <li>• Maintaining State               <ul style="list-style-type: none"> <li>○ Page state</li> <li>○ Session state</li> <li>○ Persistent cookies</li> </ul> </li> </ul>	3	5
<ul style="list-style-type: none"> <li>• Reading and updating databases               <ul style="list-style-type: none"> <li>○ Data-bound controls</li> <li>○ Database objects API</li> <li>○ Data components</li> </ul> </li> </ul>	6	2
<ul style="list-style-type: none"> <li>• Web services               <ul style="list-style-type: none"> <li>○ Creating</li> <li>○ Consuming</li> </ul> </li> </ul>	2	6
<ul style="list-style-type: none"> <li>• Web reports</li> </ul>	1	9

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**Course Outcomes Emphasized in Laboratory Projects / Assignments**

<b>Outcome</b>	<b>Number of Weeks</b>
1. Creating Web applications with user controls, input validation, and maintaining state. Outcomes: 1,3, 4, 5	4
2. Web applications with databases, Web services, client-side scripting, user authentication and authorization Outcomes: 1, 2	5
3. Web services Outcomes: 6	1
4. Web applications with client-side scripting, user authentication and authorization Outcomes: 7, 8	3
5. Web applications with reports. Outcome: 9	1

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**The Coverage of Knowledge Units within IEEE/ACM Computing  
Curricula Guidelines<sup>1</sup>**

<b>Knowledge Unit</b>	<b>Topic</b>	<b>Lecture Hours</b>
PF5	Event-driven programming	4
NC4	The web as an example of client-server computing	2
NC5	Building web applications	12
NC1	Introduction to net-centric computing	1
HC2	Building a simple graphical user interface	2
HC5	Graphical user-interface design	6
HC6	Graphical user-interface programming	8
IM5	Database query languages	3
IM7	Transaction processing	1
SE9	Component-based computing	2
SE1	Software design	2
SE2	Using APIs	3

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<sup>1</sup>See [https://www.acm.org/binaries/content/assets/education/cs2013\\_web\\_final.pdf](https://www.acm.org/binaries/content/assets/education/cs2013_web_final.pdf) for a description of Computer Science Knowledge units