

## School of Computer Science

**Course Title:** Advanced Windows Programming

**Date:** 02/13/04

**Course Number:** COP4226

<b>Subject Area:</b> Computer Systems	<b>Subject Area Coordinator:</b> Masoud Sadjadi <b>email:</b> sadjadi@cis.fiu.edu
<b>Catalog Description:</b> Refer to CS Web Site	
<b>Textbook:</b> Programming Microsoft Visual C++.NET, Sixth Edition, Shepherd and Kruglinski, Microsoft Press, 2002	
<b>References:</b> None	
<b>Prerequisites by Courses:</b> COP 4338	

### Prerequisites Topics:

- P1 Master Java multithreading and serialization
- P2 Be familiar with all elements of modern C++ programming including templates, inheritance, STL
- P3 Be familiar with elements of C programming, including the use of pointers required for C and legacy C++
- P4 Master writing program solutions to problems using the above features

### Course Objectives:

- O1 Master the MFC Library Application Framework and Event Handling
- O2 Master the GDI including Mapping Modes, Colors, Pens, Brushes, and Fonts
- O3 Master Modal and Modeless Dialog Windows
- O4 Master Menus, Keyboard Accelerators, Toolbars, Status Bars and Property Sheets
- O5 Master SDI, MDI, and dialog based applications.
- O6 Be familiar with the Windows Common Controls and Windows Common Dialogs
- O7 Be familiar with Windows Message Processing and Multithreaded Programming

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**Outline**

<b>Topic</b>	<b>Lecture Hours</b>	<b>Objective</b>
<ul style="list-style-type: none"> <li>• Introduction to Windows Programming               <ul style="list-style-type: none"> <li>○ MFC Library Application Framework</li> <li>○ AppWizard</li> <li>○ Event Handling</li> <li>○ Message Processing</li> </ul> </li> </ul>	3	O1
<ul style="list-style-type: none"> <li>• Device Contexts               <ul style="list-style-type: none"> <li>○ Mapping Modes</li> <li>○ Scrolling Windows</li> <li>○ Pens, Brushes, Fonts</li> <li>○ Drawing</li> </ul> </li> </ul>	6	O2
<ul style="list-style-type: none"> <li>• Dialog Windows               <ul style="list-style-type: none"> <li>○ Modal</li> <li>○ Modeless</li> <li>○ Dialog Controls: Edit, Radio, Checkbox, Drop Lists, Scroll Bars</li> <li>○ Common Dialogs: File, Font, Color Dialog</li> <li>○ Dialog based applications</li> </ul> </li> </ul>	8	O3, O6
<ul style="list-style-type: none"> <li>• System Basics               <ul style="list-style-type: none"> <li>○ Memory Management</li> <li>○ Message Processing</li> <li>○ Multithreading</li> </ul> </li> </ul>	5	O7
<ul style="list-style-type: none"> <li>• User Interface               <ul style="list-style-type: none"> <li>○ Menus, Keyboard Accelerators</li> <li>○ Toolbars</li> <li>○ Status Bar</li> <li>○ Property Sheets</li> </ul> </li> </ul>	4	O4
<ul style="list-style-type: none"> <li>• Separating the Document from the View               <ul style="list-style-type: none"> <li>○ SDI Applications</li> <li>○ MDI Applications</li> <li>○ Printing and Print Preview</li> <li>○ Splitter Windows and Multiple Views</li> </ul> </li> </ul>	8	O5
<ul style="list-style-type: none"> <li>• Additional Topics as Time Permits               <ul style="list-style-type: none"> <li>○ DLL</li> <li>○ ODBC</li> </ul> </li> </ul>	2	O7

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**Course Outcomes Emphasized in Assignments**

<b>Assignment</b>	<b>Outcome</b>	<b>Number of Weeks</b>
HW 1	O1, O2, O3, O6	3
HW 2	O1, O4, O5, O6, O7	3
Tutorial 1 (optional)	O1, O2	1
Tutorial 2 (optional)	O1, O3	1
Tutorial 3 (optional)	O1, O4	1
Tutorial 4 (optional)	O1, O5	1
Tutorial 5 (optional)	O1, O7	1

**Oral and Written Communication:  
None**

**Social and Ethical Implications of Computing Topics:  
None**

**Approximate number of credit hours devoted to fundamental CS topics**

<b>Algorithms: 1</b>	<b>Data Structures:4</b>
<b>Software Design: 10</b>	<b>Concepts of Programming Languages: 12</b>
<b>Computer Organization and Architecture: 0</b>	

**Theoretical Contents: NONE**

**Problem Analysis Experiences**

- |    |                        |
|----|------------------------|
| 1. | 2 Homework Assignments |
| 2. | 5 Tutorial Assignments |

**Solution Design Experiences**

- |    |                        |
|----|------------------------|
| 1. | 2 Homework Assignments |
| 2. | 5 Tutorial Assignments |

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**The Coverage of Knowledge Units within Computer Science Body of Knowledge<sup>1</sup>**

<b>Knowledge Unit</b>	<b>Topic</b>	<b>Lecture Hours</b>
PF3	Pointer and References	2
PF5	Event-handling methods	3
PF5	Event propagation	1
OS4	Processes and Threads	3
HC2	Principles of GUI	2
GV1	Using a graphics API	3
GV1	Simple color models (RGB)	1
GV1	Affine transforms (scaling, translation)	2
GV1	Clipping	1
GV2	Video display devices	1
GV2	Physical and logical input devices	2
GV2	Issues facing the developer of graphical systems	3
SE2	All Topics	2

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<sup>1</sup>See <http://www.computer.org/education/cc2001/final/chapter05.htm> for a description of Computer Science Knowledge units