A. **TITLE:** Visual Programming and Development Tools

B. **COURSE NUMBER:** CITA 342

C. **CREDIT HOURS:** 3

D. **WRITING INTENSIVE COURSE:** No

E. **COURSE LENGTH:** 15 weeks

F. **SEMESTER(S) OFFERED:** Fall

G. **HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:**
   2 lecture hours and 2 laboratory hours per week

H. **CATALOGUE DESCRIPTION:** An introduction to the development of computer applications using rapid development tools such as Visual Basic or Visual C++. Emphasis is on designing and managing graphical user interfaces, procedures, file management, debugging and testing.

I. **PRE-REQUISITES/CO-REQUISITES:**
   a. Pre-requisite(s): CITA 180 Introduction to Programming or GMMD 121 Programming for Visual Arts and Design
   b. Co-requisite(s): none

J. **GOALS (STUDENT LEARNING OUTCOMES):**

<table>
<thead>
<tr>
<th>Course Objective</th>
<th>Institutional SLO</th>
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<tbody>
<tr>
<td>a. Set up Microsoft Foundation Classes (MFC) applications from the ground up</td>
<td>5. Industry Skills</td>
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<tr>
<td>b. Develop MFC applications by working with menus, toolbars, dialogs, and other controls</td>
<td>5. Industry Skills</td>
</tr>
<tr>
<td>c. Develop MFC applications by working with documents and views</td>
<td>5. Industry Skills</td>
</tr>
<tr>
<td>d. Develop MFC applications by working with data sources</td>
<td>5. Industry Skills</td>
</tr>
<tr>
<td>e. Compose variable and class names following MFC naming conventions</td>
<td>5. Industry Skills</td>
</tr>
</tbody>
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L. **REFERENCES:** N/A
M. **EQUIPMENT:** computer classroom

N. **GRADING METHOD:** A-F

O. **MEASUREMENT CRITERIA/METHODS:**
   - Exams
   - Quizzes
   - Participation

P. **DETAILED TOPICAL OUTLINE:**

I. Windows Programming with the Microsoft Foundation Classes
   - A. MFC Notation
   - B. How an MFC Program Is Structured
   - C. The Document/View Concept in MFC
   - D. Creating MFC Applications
   - E. Communicating with Windows
   - F. Working with Menus and Toolbars

II. Drawing in a Window
   - A. The Drawing Mechanism in Visual C++
   - B. Drawing Graphics in Practice
   - C. Programming the Mouse

III. Advanced MFC Techniques
   - A. Creating the Document and Improving the View
   - B. Storing and Printing Documents
   - C. Working with Dialogs and Controls
   - D. Connecting to Data Sources
   - E. Updating Data Sources

Q. **LABORATORY OUTLINE:**

I. Create MFC applications

II. Develop MFC applications by working with menus and toolbars

III. Develop MFC applications by working with documents and views

IV. Develop MFC applications by working with device contexts

V. Develop MFC applications by working with dialogs and other controls

VI. Develop MFC applications by working with data sources