College of San Mateo
Official Course Outline

1. **COURSE ID:** CIS 125   **TITLE:** Visual Basic I
   Units: 4.0 units **Hours/Semester:** 48.0-54.0 Lecture hours; 48.0-54.0 Lab hours; and 96.0-108.0 Homework hours
   Method of Grading: Grade Option (Letter Grade or P/NP)
   Recommended Preparation:
   Eligibility for ENGL 100 or 105

2. **COURSE DESIGNATION:**
   Degree Credit
   Transfer credit: CSU; UC
   AA/AS Degree Requirements:
   CSM - GENERAL EDUCATION REQUIREMENTS: E2c.Communication and Analytical Thinking

3. **COURSE DESCRIPTIONS:**
   Catalog Description:
   Introduction to computer programming and Visual Basic. Includes computer hardware and operating systems concepts necessary for computer program coding, compilation, and execution, algorithms and problem-solving techniques using structured methods and programming in Visual Basic .NET; program testing; documentation issues and techniques; and professional ethics.

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**
   Upon successful completion of this course, a student will meet the following outcomes:
   1. Navigate the Integrated Development Environment
   2. Design/develop Graphical User interfaces
   3. Code computer programs using Visual Basic .NET
   4. Perform code tests, resolve defects and revise existing code
   5. Use the VB.NET Help system

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**
   Upon successful completion of this course, a student will be able to:
   1. Navigate the Integrated Development Environment
   2. Design/develop Graphical User interfaces
   3. Code computer programs using Visual Basic .NET
   4. Perform code tests, resolve defects and revise existing code
   5. Use the VB.NET Help system

6. **COURSE CONTENT:**
   Lecture Content:
   An Introduction to Visual Basic 2010
   - Managing Windows in the IDE
   - The Windows Form Designer Window
   - The Solution Explorer Window
   - The Properties Window
   - Properties of a Windows Form
   - Saving/Closing/Opening Solutions
   - The Toolbox Window
   - The Label Tool
   - Changing a Property for Multiple Controls
   - Using the Format Menu
   - The PictureBox Tool
   - The Button Tool
   Designing Applications
   - Creating an Object-Oriented Application
   - Planning an Object-Oriented Application
   - Building the User Interface
   - Locking the Controls on a Form

- Assigning Access Keys
- Coding the Application
- Using Pseudocode to Plan a Procedure
- Using a Flowchart to Plan a Procedure
- Writing Arithmetic Expressions
- Coding the Calculate Order Button
Using Variables and Constants
- Storing Information
- Assigning Data to Existing Variable
- Scope and Lifetime of a Variable
- Static Variables
- Named Constants
- Concatenating Strings
- Modifying the Load and Click Event Procedures C
The Selection Structure
- Making Decisions in a Program
- Coding Single-Alternative and Dual-Alternative Selection Structure
- Comparison Operators
- Logical Operators
- Comparing Strings Containing Lette
- Comparing Boolean Values
- Nested Selection Structures
- Logic Errors in Selection Structures
- Testing and Debugging

Lab Content:

The lab content both reinforces and augments the lecture portion of the class. The labs are practical hands on experiences that reinforce the theory learned in the text. Labs require the student to research and incorporate topics beyond the book. Once the student has down loaded and installed the VB.net compiler, a running computer program is designed and implemented for each of these topics.

1. Get to know the Integrated Development Environment. (IDE)
2. Building a friendly user interface.
3. Looping Mechanisms
4. Decision Mechanisms
5. Random number generators (through games)
6. Procedures and Arrays
7. Multiple Modules
8. Functions and Procedures
9. Object Oriented Classes

The final lab is a project whose criteria are defined, but the students determine what it is they want to develop. These programs are typically calculators, or games like Yahtzee, Cards, or Matching Images. It is a type of capstone project for the course.

Also emphasis in labs is using concise, accurate, and clear writing to document students' computer programs. This is typically a programmer's most arduous task and must be emphasis and required from the first lab on through to the project.

7. REPRESENTATIVE METHODS OF INSTRUCTION:

Typical methods of instruction may include:

A. Lecture
B. Lab
C. Critique
D. Directed Study
E. Discussion
F. Observation and Demonstration
G. Other (Specify): Lecture is used to introduce new topic. Teacher models problem-solving techniques. Class solves a problem together, each person contributing a potential "next step". Students participate in short in-class projects (in teacher-organized small groups) to ensure that students experiment with the new topics in realistic problem settings. Teacher invites questions and answers from students, generating discussion about areas of misunderstanding. Live code development/debugging demonstration.

8. REPRESENTATIVE ASSIGNMENTS

Representative assignments in this course may include, but are not limited to the following:

Writing Assignments:

This course has 8 computer programming labs completed in the Visual Basic Language. Each is designed to build upon the previous. All feed into a final project which is to employ all major topics covered in the semester.

Lab 1: Students PLAN a program on paper
Lab 2: Controls, Buttons, Text
Lab 3: Validating input, Internal Documentation
Lab 4: Variables, Menus, Focus, Data Checking, Ranges
Lab 5: Control Structures: Conditional, Looping
Lab 6: List Boxes, Multiple Forms
Lab 7: Functions, Error Checking, Program Organization
Lab 8: Arrays
FINAL PROJECT Options: calculator, Yatzee, math tutorial

Labs can take a student 5-20 hours to finish depending on their grasp of the chapter content. The final project can be done alone or in groups and typically takes two weeks to complete.

Reading Assignments:

Students read a chapter every 1.5 weeks. Each chapter is approximately 50 pages with many hands-on exercises they are expected to complete.

Chapt. 1 Visual Basic Environment
Chapt. 2 Building a User Interface
Chapt. 3 Creating Code - Language Structure
Chapt. 4 Variables
Chapt. 5 Boolean Logic and Control Structures
Chapt. 6 More User Interface Controls
Chapt. 7 Program Organization: Functions
Chapt. 8 Arrays - with Loops

Additional chapters can be assigned as time allows: DataBases, Deploying Applications

9. **REPRESENTATIVE METHODS OF EVALUATION**

Representative methods of evaluation may include:
   A. Class Participation
   B. Class Performance
   C. Exams/Tests
   D. Quizzes
   E. Individual programming assignments to assess objectives 4-7

10. **REPRESENTATIVE TEXT(S):**

Possible textbooks include:
   A. Zak, Diane. *Programming with Microsoft Visual Basic 2015*, 7th ed. Course Technology, Cengage Learning, 2016
   B. Gaddis & Irvine. *Starting Out With Visual Basic* , 7th ed. Addison-Wesley, 2016

Origination Date: October 2015
Curriculum Committee Approval Date: January 2017
Effective Term: Fall 2017
Course Originator: Martha Tilmann