COURSE: Visual Basic Programming	GRADE(S): 10 11 12
UNIT 1 : Intro to Programming	

NATIONAL STANDARDS:
ALL STUDENTS…

- Demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:
- Apply digital tools to gather, evaluate, and use information.
- Use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
- Understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
- Design, develop, test, and implement programs.
- Gather, evaluate, use, cite and disseminate information from technology sources
- Assess the impact of information technology in a global society
- Demonstrate interpersonal, teamwork, problem solving, and leadership skills
- Develop career awareness, make career choices, and become employable in a variety of careers
- Prepare for further education and lifelong learning

STATE STANDARDS:	UNIT OBJECTIVES:
• **M11.A.2** Understand the meanings of operations, use operations and understand how they relate to each other. • **M11.A.1.3.2:** Compare and/or order any real numbers (rational and irrational may be mixed). • **M11.D.1** Demonstrate an understanding of patterns, relations and functions. • **2.5.11C.** Present mathematical procedures and results clearly, systematically, succinctly and correctly. • **2.5.11A.** Select and use appropriate mathematical concepts and techniques from different areas of mathematics and apply them to solving non-routine and multi-step problems.	**1.1 Create basic and understand basic programming algorithms** **1.2 Use Form controls and objects to create window forms** **1.3 Generate Code inside of button and label objects** **1.4 Display graphics through form controls and image boxes** **1.5 Accept user input into programs through textboxes**
ACTIVITIES: 1.1 – 1.4 Basic Form Design Button actions Displaying images into Picture/Image Boxes Generate events using button and label actions **RESOURCES:** **Visual Basic 2008 (Deital)**	**ASSESSMENTS :** Slide Show Program Simple Form Creation and textbox input program **REMEDIATION:** Use Microsoft PowerPoint to help assist in Form Design **ENRICHMENT:** Make the images move around the screen Change Addition of Rich Text Boxes to forms

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UNIT 2 : Logic Programming	

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STATE STANDARDS:

- **M11.E.1** Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.
- **M11.E.4** Develop and evaluate inferences and predictions or draw conclusions based on data or data displays.
- **M11.E.3** Understand and/or apply basic concepts of probability or outcomes.
- **M11.A.3** Compute accurately and fluently and make reasonable estimates.
- **2.5.11C.** Present mathematical procedures and results clearly, systematically, succinctly and correctly.
- **2.5.11A.** Select and use appropriate mathematical concepts and techniques from different areas of mathematics and apply them to solving non-routine and multi-step problems.

UNIT OBJECTIVES:

- **2.1** Use Arithmetic operators in Visual Basic
- **2.2** Declare and use primitive variables to store data
- **2.3** Write simple decision making statements
- **2.4** Use and understand programming methods
- **2.5** Generate random numbers using methods and algorithms

ACTIVITIES:

2.1 – 2.5
Simple Age Calculator
Who is older? (Extension from Age Program)
Generating Random Numbers
Random Image Viewer Program
Blast off Program

RESOURCES:

Visual Basic 2008 (Deital)

ASSESSMENTS :

Random Number Guessing Game
(Jar of Jelly Beans)
Countdown Program
Lottery Program

REMEDIATION:

Use dice to explain random numbers and basic probability.

ENRICHMENT:

Use the Visual Basic “Math Methods” in order to perform more complex operations

COURSE: Visual Basic Programming	GRADE(S): 10 11 12
UNIT 3 : Control Structures	

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STATE STANDARDS:	UNIT OBJECTIVES:
• **M11.A.2** Understand the meanings of operations, use operations and understand how they relate to each other. • **M11.B.2** Apply appropriate techniques, tools and formulas to determine measurements. • **M11.E.2** Select and/or use appropriate statistical methods to analyze data. • **M11.E.3.2** Apply counting techniques in problem-solving settings. • **2.5.11C.** Present mathematical procedures and results clearly, systematically, succinctly and correctly. • **2.5.11A.** Select and use appropriate mathematical concepts and techniques from different areas of mathematics and apply them to solving non-routine and multi-step problems.	**3.1** Use and understand the effectiveness of Boolean Variables **3.2** Write and interpret if/then statements **3.3** Create nested if Statements in order to **3.4** Use radio button and checkboxes **3.5** controls in order to allow user selections
ACTIVITIES: 3.1 – 3.5 Revisit Age program and add if statements Password checker program Number -> Letter Grade converter T-Shirt Order Form Program -(Checkboxes and radio buttons) **RESOURCES:** **Visual Basic 2008 (Deital)**	**ASSESSMENTS :** Amusement Park GUI Program Shopping/Grocery Store Program Control Structure Quiz **REMEDIATION:** Work with partners and examine other programmer's code. **ENRICHMENT:** Students will add sound to enhance programs.

COURSE: Visual Basic Programming	GRADE(S): 10 11 12
UNIT 4 : Graphics/Keyboard Input	

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- Design, develop, test, and implement programs.
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STATE STANDARDS:

- **M11.D.3.1.1** Identify, describe and/or use constantor varying rates of change.
- **M11.D.2** Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs.
- **2.5.11C.** Present mathematical procedures and results clearly, systematically, succinctly and correctly.
- **2.5.11A.** Select and use appropriate mathematical concepts and techniques from different areas of mathematics and apply them to solving non-routine and multi-step problems.

UNIT OBJECTIVES:

- **4.1** Display drawings to the form using primitive drawing techniques.(Lines, Points, etc…)
- **4.2** Use primitive drawing techniques in order to draw figures. (Ellipses, Rectangles, and Polygons)
- **4.3** Use more higher level techniques in order to draw and display images to the form
- **4.4** Create basic animations using buttons and images
- **4.5** Use VB timers to animate objects
- **4.6** Accept Asyncronized and Non-Asyncronized keyboard Inputs

ACTIVITIES:

4.1-4.6
House Drawing using primitive techniques
Complex house drawing including real images
Image Manipulation Program
Click Animation Scene
Intro to timers and animation program
Multiple Key Press Race Program
Interactive Movie with animations

RESOURCES:

Visual Basic 2008 (Deital)

ASSESSMENTS :

MS Paint Program Test
Image/figure slideshow
Simple Race Program
Keyboard Input Quiz

REMEDIATION:

Use graph paper to assist students with their understanding of the forms drawing area.

ENRICHMENT:

Students will add additional challenge content to their MS Paint program, such as the "Spray Can" tool.

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UNIT 5 : Complex Control Structures	

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STATE STANDARDS:	UNIT OBJECTIVES:
• **M11.D.3.1.1** Identify, describe and/or use constant or varying rates of change. • **M11.D.2** Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs. • **2.5.11C.** Present mathematical procedures and results clearly, systematically, succinctly and correctly. • **2.5.11A.** Select and use appropriate mathematical concepts and techniques from different areas of mathematics and apply them to solving non-routine and multi-step problems.	**5.1** Use the while, do while, and do until loop to execute statements in a program repeatedly **5.2** Use the compound operators to abbreviate assignment operators **5.3** Use counter-controlled repetition and sentinel-controlled repetition **5.4** Use nested control statements
ACTIVITIES: 5.1-5.4 Blastoff Program Password Security Program Grade entry program Amusement Park Access Program Menu Program Restaurant POS System **RESOURCES:** **Visual Basic 2008 (Deital)**	**ASSESSMENTS :** Loops Quiz Graded Menu Program Nested Control Structures Test Grade Book Program Test **REMEDIATION:** Using Excel to visualize the data for entry **ENRICHMENT:** Online research of advanced topics and real life business applications that utilize the chapter's topics.

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UNIT 6 : Complex Collision and Arrays	

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STATE STANDARDS:

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- **M11.D.2** Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs.
- **2.5.11C.** Present mathematical procedures and results clearly, systematically, succinctly and correctly.
- **2.5.11A.** Select and use appropriate mathematical concepts and techniques from different areas of mathematics and apply them to solving non-routine and multi-step problems.

UNIT OBJECTIVES:

- **6.1** Use and create basic sound effects and produce sound output through VB Forms
- **6.2** Detect collision between rectangular bounding boxes surrounding objects.
- **6.3** Detect Collision between non-rectangular objects
- **6.4** Use and declare Public/Global variables accessible by multiple forms
- **6.5** Use, declare, and initialize arrays

ACTIVITIES:

6.1-6.5

Adding sound effects to previous programs such as the blastoff program
Drawing Collision boxes around various images
Game Show Program (Who Wants to be a Millionaire?/Deal or No Deal) with Arrays
Complex Menu/Restaurant Interface Program using public variables
Banking Array Program

RESOURCES:

Visual Basic 2008 (Deital)

ASSESSMENTS :

Sound Board Test Program
Array Quiz
Restaurant Interface Program
Final Exam covering all concepts covered in VB
Final Project of student's choice to demonstrate knowledge of Visual Basic Programming

REMEDIATION:
Video/article on collision detection

ENRICHMENT:

File saving, Drag and Drop