

PASSAIC COUNTY TECHNICAL INSTITUTE
45 Reinhardt Rd.
Wayne, NJ

Computer Science II
(CS II)
Course # 1028
Credits 12.5
2018

I. **Course Description**

Computer Science II is a full year course for students who have successfully completed Computer Science I and are continuing in the Academy of Information Technology. During the second year of study, students will be introduced to 3 major topics that will allow them to expand their Computer Science expertise attained in their first year. This includes learning to design a website for a small business using HTML and CSS while following Technology Project Management procedures and practices in all work, JavaScript Programming, Creating Android Mobile Apps with the MIT App Inventor Open Source Platform and Web Design with Database Concepts/E-Commerce.

WEB DESIGN FOR SMALL BUSINESS

PCCC - Website Design and Tools - (CIS 170)

In this part of the course, students will work in teams to develop a website for a small business utilizing a combination of HTML and CSS and exploring various web design methods and web authoring tools in the process. Throughout the unit, students will be introduced to basic Information Technology Project Management concepts designed to convey the concept of projects, their application in the IT Industry as well as several Information Technology Project Management tools and techniques. Emphasis will be placed on project planning, design and implementation as well as working with technology teams. The software development project life cycle phases will be followed in all work.

MOBILE APP DEVELOPMENT

PCCC - Fundamentals of Computer Science 1 - (CIS 160)

PCCC - Mobile App Development - (CIS 240)

In this part of the course, students will combine their software development and web design skills to develop android applications for mobile devices. Topics covered in this unit will include JavaScript programming, application of algorithms in problem solving, variables, data types, operators, functions, objects and methods, loops, arrays and conditional statements as well as utilizing open-source web platforms for mobile app development.

WEB DESIGN WITH DATABASE CONCEPTS. E-COMMERCE/PORTFOLIOS

In the final part of the course, students will build up their communication and business experience of running web sites with the emphasis the application of JavaScript and Database Concepts. Time will also be spent on design and development so students can test and debug with programming knowledge while they incorporate additional functions that can be used to enhance their learning experience.

II. Curriculum Unit Planner

Unit 1

Content Area:	COMPUTER SCIENCE II	Grade(s)	10
Unit Plan Title:	<p data-bbox="632 578 1325 610">Unit 1 – Web Design For Small Business – 51 Days</p> <p data-bbox="632 634 1961 737">Unit 1 will introduce the basic concepts of Web Design in a Project Management setting, including on overview of HTML, project planning, design, implementation as well as working with technology teams and following project requirements</p> <ul style="list-style-type: none"> <li data-bbox="680 753 1696 1078"> <p data-bbox="680 753 932 786">I. HTML (9 days)</p> <ul style="list-style-type: none"> <li data-bbox="779 792 1696 824">a. Creating HTML documents (1 day) <li data-bbox="779 831 1696 863">b. Adding and Formatting Text (1 day) <li data-bbox="779 870 1696 902">c. Inserting and Formatting Graphics (1 day) <li data-bbox="779 909 1696 941">d. HTML Color Codes and RGB values (1 day) <li data-bbox="779 948 1696 980">e. Creating Tables (1 day) <li data-bbox="779 987 1696 1019">f. Populating tables with data (1 day) <li data-bbox="779 1026 1696 1058">g. Defining page layout using tables (1 day) <li data-bbox="779 1065 1696 1097">h. Creating Online Forms (2 days) <li data-bbox="680 1104 1713 1421"> <p data-bbox="680 1104 1331 1136">II. Technology Project Management (42 days)</p> <ul style="list-style-type: none"> <li data-bbox="779 1143 1696 1175">a. Projects vs Tasks (2 days) <li data-bbox="779 1182 1696 1214">b. Benefits of Project Management (2 days) <li data-bbox="779 1221 1696 1253">c. Role of the Project Manager (2 days) <li data-bbox="779 1260 1696 1292">d. Working with Teams (4 days) <li data-bbox="779 1299 1696 1331">e. Project Life Cycle (5 days) <li data-bbox="779 1338 1696 1370">f. Estimating Techniques (5 days) <li data-bbox="779 1377 1696 1409">g. Risk Management (5 days) <li data-bbox="779 1416 1713 1448">h. Team Project (14 days) 		

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| | <ul style="list-style-type: none"> i. Team Project Presentations (2 days) j. Unit Test (1 days) |
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51 Days Are Required for this unit.

NJSLS/CCTC Standard(s) Addressed

- CRP2.** Apply appropriate academic and technical skills.
- CRP10.** Plan education and career paths aligned to personal goals.
- CRP11.** Use technology to enhance productivity.

- 9.3. IT.6** Describe trends in emerging and evolving computer technologies and their influence on IT practices.
- 9.3. IT.12** Demonstrate knowledge of the hardware components associated with information systems.

- 9.3. IT-PRG.1** Analyze customer software needs and requirements.
- 9.3. IT-PRG.6** Program a computer application using the appropriate programming language.

Essential Questions (3-5)

1. What is a Project?
2. What is Project Management?
3. What is the role of the Project Manager?
4. What is a Team?
5. What are the steps in the Project Lifecycle?
6. What is the difference between project objectives and project requirements?
7. What is the purpose of the Work Breakdown Structure?

Anchor Text(s)

New Perspectives on HTML5, CSS3, and JavaScript, 6th Edition, Patrick M. Carey, Copyright 2018
 Project Management Institute: “ A Guide to the Project Management Body of Knowledge”, 3Rd Edition, 2009

Short & Informational Texts (3-5)

ARTICLES

- Project Management Institute Knowledge Center: “The High Cost of Low Performance”
<http://www.pmi.org/~media/PDF/Knowledge%20Center/Pulse-Data-Highlights.ashx>

- Related articles from the Project Management Institute Knowledge Center: <http://www.pmi.org/Knowledge-Center.aspx>
- Related articles from Project Management Journal <http://www.pmi.org/Knowledge-Center/Publications-Project-Management-Journal.aspx>

Expected Proficiencies/Career and Life Skills

- Regularly solve case problems relating to presented project management concepts.
- Develop strategies and plans for course based instructor defined technology projects.
- Assume leadership positions and fulfill the role of Project Manager during in-class team projects.
- Guide and assist team members during in-class team projects
- Deliver verbal project presentations to audiences of fictitious clients and managers
- Access the Canvas online system to submit and obtain project data

Formative & Summative Assessments

- Weekly Lab Projects (Formative)
- Weekly Quizzes (Formative)
- Website for a Small Business (Summative)
- Chapter/Unit Test (Summative)

Resources (Websites, LMS, Google Classroom, documents, etc.)

- Canvas LMS
- Microsoft PowerPoint
- Microsoft Word
- Canvas/Docs/Slides
- YouTube

Suggested Time Frame:

51 days

Unit 2

Content Area:	COMPUTER SCIENCE II	Grade(s)	10
Unit Plan Title:	Unit 2 – Mobile App Development Part I – Introducing JavaScript - 27 Days In this unit of the course, students will combine their software development and web design skills to develop android applications for mobile devices utilizing MIT App Inventor, JavaScript and CSS. Topics covered in this unit will include writing output, syntax rules, variables and data types, functions, commenting and debugging techniques. <ul style="list-style-type: none">I. Introduction to JavaScript (27 days)<ul style="list-style-type: none">a. Benefits of JavaScript (2 days)b. SCRIPT element (1 day)c. Writing Output to a Web Page (1 day)d. Understanding Syntax (3 days)e. Variables and data types (2 days)f. Functions (5 days)g. External Files (2 days)h. Commenting Code (2 days)i. Debugging Techniques (2 days)j. Unit Review and Case Projects (5 days)k. Project Presentations (1 day)l. Unit Test (1 day) 27 days are required for this unit.		
NJSLS/CCTC Standard(s) Addressed			
CRP1. Act as a responsible and contributing citizen and employee.			

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

9.3. IT.1 Demonstrate effective professional communication skills and practices that enable positive customer relationships.

9.3. IT.4 Demonstrate positive cyber citizenry by applying industry accepted ethical practices and behaviors.

9.3. IT-SUP.1 Provide technology support to maintain service.

9.3. IT-SUP.3 Apply appropriate troubleshooting techniques in resolving computer hardware, software, and configuration problems.

9.3. IT-SUP.6 Evaluate the effectiveness of an information system.

Essential Questions (3-5)

1. What is Client-Server Programming?
2. What is the benefit of combining JavaScript with HTML?
3. What are the JavaScript variable types?
4. What is a function?

Anchor Text(s)

New Perspectives on HTML5, CSS3, and JavaScript, 6th Edition, Patrick M. Carey, Copyright 2018

Android App Inventor for the Absolute Beginner, 1st Edition, Lakshmi Prayaga | Jeffrey Hawthorne | Alex Whiteside, Copyright 2014

Short & Informational Texts (3-5)

ARTICLES

- Enis, Matt: “Cracking the Code”, Library Journal. 03/01/2013, Vol. 138 Issue 4, p24. 1p.
<http://web.a.ebscohost.com/ehost/detail?vid=13&sid=c1165d91-fcbd-4f73-8fbb-1002811c2d49%40sessionmgr4003&hid=4206&bdata=JnNpdGU9ZWWhvc3QtbGl2ZQ%3d%3d#db=lxh&AN=85661185>
- Chudnov, Daniel: “A Mobile Strategy Web Developers Will Love”, Computers in Libraries. May2010, Vol. 30 Issue 4, p24-26. 3p.
<http://web.a.ebscohost.com/ehost/detail?vid=19&sid=c1165d91-fcbd-4f73-8fbb-1002811c2d49%40sessionmgr4003&hid=4206&bdata=JnNpdGU9ZWWhvc3QtbGl2ZQ%3d%3d#db=lxh&AN=49802125>
- Gruber, Dave: “10 hot JavaScript framework projects”, ComputerWorld, October 8, 2013 http://www.computerworld.com/s/article/9243194/10_hot_JavaScript_framework_projects

Expected Proficiencies/Career and Life Skills	
<ul style="list-style-type: none"> • Develop programming solutions to daily lab assignments as well as review projects and tests. • Develop strategies and plans for course based instructor defined technology projects. • Develop algorithms and flowcharts for upcoming programs based on problem statements • Conduct regular data and file backups • Access the Canvas online system to submit and obtain project data 	
Formative & Summative Assessments	
<ul style="list-style-type: none"> • Weekly Lab Projects (Formative) • Weekly Quizzes (Formative) • Website for a Small Business (Summative) • Chapter/Unit Test (Summative) 	
Resources (Websites, LMS, Google Classroom, documents, etc.)	
<ul style="list-style-type: none"> • Canvas LMS • Microsoft PowerPoint • Microsoft Word • Canvas/Docs/Slides • YouTube • Project Data Files (Cengage) • MIT App Inventor - http://appinventor.mit.edu/ • MIT AI2 Companion App 	
Suggested Time Frame:	27 days

Unit 3

Content Area:	COMPUTER SCIENCE II	Grade(s)	10
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Unit Plan Title:**Unit 3 – Mobile App Development Part II – JavaScript Operators and Expressions – 25 Days**

In this unit of the course, students will combine their software development and web design skills to develop android applications for mobile devices utilizing MIT App Inventor, JavaScript and CSS. Topics covered in this unit will include events and event handlers, objects and methods, operators and operands, time-delayed and timed-interval commands.

- I. JavaScript Operators and Expressions (25 days)
 - a. Events and event handlers (2 days)
 - b. Intro to objects and methods (2 days)
 - c. Date object and methods (3 days)
 - d. Operators and operands (3 days)
 - e. Math object and methods (2 days)
 - f. Formatting numbers (1 day)
 - g. Conditional, Comparison and Logical Operators (3 days)
 - h. Timed Delayed Commands (1 day)
 - i. Timed Interval Commands (1 day)
 - j. Unit Review and Case Projects (5 days)
 - k. Project Presentations (1 day)
 - l. Unit Test (1 day)

25 days are required for this unit.

NJSLS/CCTC Standard(s) Addressed

CRP2. Apply appropriate academic and technical skills.

CRP6. Demonstrate creativity and innovation.

CRP7. Employ valid and reliable research strategies.

CRP11. Use technology to enhance productivity.

9.3. IT.2 Use product or service design processes and guidelines to produce a quality information technology (IT) product or service.

9.3. IT.6 Describe trends in emerging and evolving computer technologies and their influence on IT practices.
9.3. IT.13 Compare key functions and applications of software and determine maintenance strategies for computer systems.

9.3. IT-SUP.3 Apply appropriate troubleshooting techniques in resolving computer hardware, software and configuration problems.
9.3. IT-SUP.4 Perform installation, configuration and maintenance of operating systems.
9.3. IT-SUP.9 Employ technical writing and documentation skills in support of an information system.
9.3. IT-SUP.10 Apply quality assurance processes to maximize information system operation.

Essential Questions (3-5)

1. What is the purpose of events and event handlers?
2. What is the benefit of object based programming languages?
3. What is the benefit of using object methods?
4. What are the different types of operators found in JavaScript?

Anchor Text(s)

New Perspectives on HTML5, CSS3, and JavaScript, 6th Edition, Patrick M. Carey, Copyright 2018

Android App Inventor for the Absolute Beginner, 1st Edition, Lakshmi Prayaga | Jeffrey Hawthorne | Alex Whiteside, Copyright 2014

Short & Informational Texts (3-5)

- Enis, Matt: “Cracking the Code”, Library Journal. 03/01/2013, Vol. 138 Issue 4, p24. 1p.
<http://web.a.ebscohost.com/ehost/detail?vid=13&sid=c1165d91-fcbd-4f73-8fbb-1002811c2d49%40sessionmgr4003&hid=4206&bdata=JnNpdGU9ZWWhvc3QtbGl2ZQ%3d%3d#db=lxh&AN=85661185>
- Chudnov, Daniel: “A Mobile Strategy Web Developers Will Love”, Computers in Libraries. May2010, Vol. 30 Issue 4, p24-26. 3p.
<http://web.a.ebscohost.com/ehost/detail?vid=19&sid=c1165d91-fcbd-4f73-8fbb-1002811c2d49%40sessionmgr4003&hid=4206&bdata=JnNpdGU9ZWWhvc3QtbGl2ZQ%3d%3d#db=lxh&AN=49802125>
- Gruber, Dave: “10 hot JavaScript framework projects”, ComputerWorld, October 8, 2013 http://www.computerworld.com/s/article/9243194/10_hot_JavaScript_framework_projects

Expected Proficiencies/Career and Life Skills

- Develop programming solutions to daily lab assignments as well as review projects and tests.
- Develop strategies and plans for course based instructor defined technology projects.

- Develop algorithms and flowcharts for upcoming programs based on problem statements
- Conduct regular data and file backups
- Access the Canvas online system to submit and obtain project data

Formative & Summative Assessments

- Weekly Lab Projects (Formative)
- Weekly Quizzes (Formative)
- Website for a Small Business (Summative)
- Chapter/Unit Test (Summative)

Resources (Websites, LMS, Google Classroom, documents, etc.)

- Canvas LMS
- Microsoft PowerPoint
- Microsoft Word
- Canvas/Docs/Slides
- YouTube
- Project Data Files (Cengage)
- MIT App Inventor - <http://appinventor.mit.edu/>
- MIT AI2 Companion App

Suggested Time Frame: 25 days

Unit 4

Content Area:	COMPUTER SCIENCE II	Grade(s)	10
Unit Plan Title:	Unit 4 – MOBILE APP DEVELOPMENT Part III – JavaScript Control Structures – 28 days		
	In this unit of the course, students will combine their software development and web design skills to develop		

android applications for mobile devices utilizing MIT App Inventor, JavaScript and CSS. Topics covered in this unit will include the development and application of algorithms in problem solving, loops, arrays and conditional statements.

- I. JavaScript Control Structures (21 days)
 - a. Arrays (5 days)
 - b. Loops (6 days)
 - c. Conditional Statements (6 days)
 - d. Using Loops to build an online calendar (1 day)
 - e. Using Loops to validate user input (1 day)
 - f. Managing Program Loops and Conditional Statements (2 days)
 - g. Unit Review and Case Projects (5 days)
 - h. Project Presentations (1 day)
 - i. Unit Test (1 day)

28 days are required for this unit.

NJSLS/CCTC Standard(s) Addressed

CRP2. Apply appropriate academic and technical skills.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11. Use technology to enhance productivity.

9.3. IT-SUP.1 Provide technology support to maintain service.

9.3. IT-SUP.3 Apply appropriate troubleshooting techniques in resolving computer hardware, software and configuration problems.

9.3. IT-SUP.9 Employ technical writing and documentation skills in support of an information system.

9.3. IT-SUP.10 Apply quality assurance processes to maximize information system operation.

Essential Questions (3-5)

1. What is an Array?
2. What is the purpose of Arrays?
3. What is the role of loops in computer programming?
4. What are the loop types found in JavaScript?
5. What is the purpose of conditional statements?

Anchor Text(s)

New Perspectives on HTML5, CSS3, and JavaScript, 6th Edition, Patrick M. Carey, Copyright 2018

Android App Inventor for the Absolute Beginner, 1st Edition, Lakshmi Prayaga | Jeffrey Hawthorne | Alex Whiteside, Copyright 2014

Short & Informational Texts (3-5)

ARTICLES

- Enis, Matt: “Cracking the Code”, Library Journal. 03/01/2013, Vol. 138 Issue 4, p24. 1p.
<http://web.a.ebscohost.com/ehost/detail?vid=13&sid=c1165d91-fcbd-4f73-8fbb-1002811c2d49%40sessionmgr4003&hid=4206&bdata=JnNpdGU9ZWWhvc3QtbGl2ZQ%3d%3d#db=lxh&AN=85661185>
- Chudnov, Daniel: “A Mobile Strategy Web Developers Will Love”, Computers in Libraries. May2010, Vol. 30 Issue 4, p24-26. 3p.
<http://web.a.ebscohost.com/ehost/detail?vid=19&sid=c1165d91-fcbd-4f73-8fbb-1002811c2d49%40sessionmgr4003&hid=4206&bdata=JnNpdGU9ZWWhvc3QtbGl2ZQ%3d%3d#db=lxh&AN=49802125>
- Gruber, Dave: “10 hot JavaScript framework projects”, ComputerWorld, October 8, 2013 http://www.computerworld.com/s/article/9243194/10_hot_JavaScript_framework_projects

Expected Proficiencies/Career and Life Skills

- Develop programming solutions to daily lab assignments as well as review projects and tests.
- Develop strategies and plans for course based instructor defined technology projects.
- Develop algorithms and flowcharts for upcoming programs based on problem statements
- Conduct regular data and file backups
- Access the Canvas online system to submit and obtain project data

Formative & Summative Assessments

- Weekly Lab Projects (Formative)
- Weekly Quizzes (Formative)
- Chapter Review and Case Projects
- Chapter/Unit Test (Summative)

Resources (Websites, LMS, Google Classroom, documents, etc.)

- Canvas LMS
- Microsoft PowerPoint
- Microsoft Word
- Canvas/Docs/Slides
- YouTube
- Project Data Files (Cengage)

Suggested Time Frame: 28 days

Unit 5

Content Area:	COMPUTER SCIENCE II	Grade(s)	10																				
Unit Plan Title:	<p>Unit 5 – MOBILE APP DEVELOPMENT Part IV – MIT App Inventor – 21 days</p> <p>In this unit of the course, students will combine their software development and web design skills to develop android applications for mobile devices utilizing MIT App Inventor, JavaScript and CSS. Topics covered in this unit will include the development of Android apps with MIT App Inventor, testing with the AI2 Companion App, Basic and Extended App Development and Java Bridge.</p> <p style="margin-left: 40px;">I. MIT App Inventor (21 days)</p> <table style="margin-left: 80px; border: none;"> <tr> <td style="padding-left: 20px;">a. MIT App Instructor Online Platform Setup</td> <td style="text-align: right;">(1 day)</td> </tr> <tr> <td style="padding-left: 20px;">b. Overview: Designer and Block Editor</td> <td style="text-align: right;">(1 day)</td> </tr> <tr> <td style="padding-left: 20px;">c. Overview: AI2 Companion App</td> <td style="text-align: right;">(1 day)</td> </tr> <tr> <td style="padding-left: 20px;">d. Overview: The Emulator Tool</td> <td style="text-align: right;">(1 day)</td> </tr> <tr> <td style="padding-left: 20px;">e. Getting Started with Beginner Tutorials</td> <td style="text-align: right;">(2 days)</td> </tr> <tr> <td style="padding-left: 20px;">f. Packaging and Testing Completed Apps</td> <td style="text-align: right;">(1 day)</td> </tr> <tr> <td style="padding-left: 20px;">g. App Development: Text To Speech Part 1</td> <td style="text-align: right;">(1 day)</td> </tr> <tr> <td style="padding-left: 20px;">h. App Development: Text To Speech Part 2</td> <td style="text-align: right;">(1 day)</td> </tr> <tr> <td style="padding-left: 20px;">i. App Development: Ball Bounce Game App</td> <td style="text-align: right;">(1 day)</td> </tr> <tr> <td style="padding-left: 20px;">j. App Development: Magic 8 Ball</td> <td style="text-align: right;">(1 day)</td> </tr> </table>			a. MIT App Instructor Online Platform Setup	(1 day)	b. Overview: Designer and Block Editor	(1 day)	c. Overview: AI2 Companion App	(1 day)	d. Overview: The Emulator Tool	(1 day)	e. Getting Started with Beginner Tutorials	(2 days)	f. Packaging and Testing Completed Apps	(1 day)	g. App Development: Text To Speech Part 1	(1 day)	h. App Development: Text To Speech Part 2	(1 day)	i. App Development: Ball Bounce Game App	(1 day)	j. App Development: Magic 8 Ball	(1 day)
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f. Packaging and Testing Completed Apps	(1 day)																						
g. App Development: Text To Speech Part 1	(1 day)																						
h. App Development: Text To Speech Part 2	(1 day)																						
i. App Development: Ball Bounce Game App	(1 day)																						
j. App Development: Magic 8 Ball	(1 day)																						

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| | <ul style="list-style-type: none"> k. App Development: Mini Golf Game (1 day) l. App Development: Painting Pot (1 day) m. App Development: Mole Mash (1 day) n. Overview: App Development with Java Bridge (4 days) o. Project Presentations (2 days) p. Unit Test (1 day) |
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21 days are required for this unit.

NJSLS/CCTC Standard(s) Addressed

CRP2. Apply appropriate academic and technical skills.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11. Use technology to enhance productivity.

9.3. IT.6 Describe trends in emerging and evolving computer technologies and their influence on IT practices.

9.3. IT-SUP.3 Apply appropriate troubleshooting techniques in resolving computer hardware, software and configuration problems.

Essential Questions (3-5)

1. How is mobile computing different from traditional computing?
2. What is the impact of mobile computing on the field of computer science?
3. What are the steps for installing an android app on a mobile device?
4. What is the difference between iOS and Android environments as far as app development is concerned?

Anchor Text(s)

Android App Inventor for the Absolute Beginner, 1st Edition, Lakshmi Prayaga | Jeffrey Hawthorne | Alex Whiteside, Copyright 2014

Short & Informational Texts (3-5)

ARTICLES

R. Marvin: “Building an App with No Coding: Myth or Reality?” PC Magazine, June 30, 2016

<https://www.pcmag.com/article/345661/building-an-app-with-no-coding-myth-or-reality>

B. Stackpole: “Your next job: Mobile app developer?” Computerworld Magazine, June 27, 2011

<https://www.computerworld.com/article/2509463/app-development/your-next-job--mobile-app-developer-.html>

Rakestraw, Eunni, Kagusanti: “The mobile apps industry: A case study, Journal of Business Cases and Applications”, 2015

<http://www.aabri.com/manuscripts/131583.pdf>

Expected Proficiencies/Career and Life Skills

- Develop Android based mobile programming solutions to daily lab assignments as well as review projects and tests.
- Develop strategies and plans for course based instructor defined technology projects.
- Develop algorithms and flowcharts for upcoming programs based on problem statements
- Conduct regular data and file backups
- Access the Canvas online system to submit and obtain project data

Formative & Summative Assessments

- Weekly Lab Projects (Formative)
- Weekly Quizzes (Formative)
- Chapter Review and Case Projects (Summative)
- Chapter/Unit Test (Summative)

Resources (Websites, LMS, Google Classroom, documents, etc.)

- Canvas LMS
- Microsoft PowerPoint
- Microsoft Word
- Canvas/Docs/Slides
- YouTube
- Project Data Files (Cengage)
- MIT App Inventor - <http://appinventor.mit.edu/>
- MIT AI2 Companion App

Suggested Time Frame:	21 days
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Unit 6

Content Area:	Computer Science II	Grade(s)	10
Unit Plan Title:	<p>Unit 6 – Web design with Database Concepts. E-commerce/Portfolios</p> <p>Unit 6 will cover advance Web Design. Students will build up their communication and business concepts of running websites with a focus on JavaScript and Databases. Time will also be spent on designs and development, so students can test and debug with programming knowledge while they incorporate other functions that can be made to enhance their learning experience.</p> <ul style="list-style-type: none"> I. Dreamweaver and Databases (13 days) <ul style="list-style-type: none"> 1. Dreamweaver review (3 days) 2. Web API (4 days) 3. Microsoft Access integration (3 days) 4. Routing and validations (3 days) II. Business and Portfolio Website (15 days) <ul style="list-style-type: none"> 1. Develop concepts of online database (3 days) 2. Planning and building blueprint (2 days) 3. Understand modules for database integration (2 days) 4. Project management (2 days) 5. Communication and teamwork distribution (2 days) 		

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| | 6. Constructs design based on needs | (2 days) |
| | 7. Project integration | (2 days) |

NJSLS/CCTC Standard(s) Addressed

- CRP2.** Apply appropriate academic and technical skills.
- CRP4.** Communicate clearly and effectively and with reason
- CRP6.** Demonstrate creativity and innovation.
- CRP7.** Employ valid and reliable research strategies.
- CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP11.** Use technology to enhance productivity.
- CRP12.** Work productively in teams while using cultural global competence.
- 9.3. IT.1** Demonstrate effective professional communication skills and practices that enable positive customer relationships.
- 9.3. IT.2** Use product or service design processes and guidelines to produce a quality information technology (IT) product or service
- 9.3. IT-PRG.1** Analyze customer software needs and requirements.
- 9.3. IT-PRG.2** Demonstrate the use of industry standard strategies and project planning to meet customer specifications.
- 9.3. IT-PRG.5** Apply an appropriate software development process to design a software application.
- 9.3. IT-PRG.6** Program a computer application using the appropriate programming language.
- 9.3. IT-PRG.7** Demonstrate software testing procedures to ensure quality products.
- 9.3. IT-PRG.8** Perform quality assurance tasks as part of the software development cycle.
- 9.3. IT-PRG.10** Design, create and maintain a database.
- 9.3. IT-WD.1** Analyze customer requirements to design and develop a Web or digital communication product.
- 9.3. IT-WD.2** Apply the design and development process to produce user-focused Web and digital communications solutions.
- 9.3. IT-WD.3** Write product specifications that define the scope of work aligned to customer requirements.
- 9.3. IT-WD.4** Demonstrate the effective use of tools for digital communication production, development and project management.
- 9.3. IT-WD.6** Design, create and publish a digital communication product based on customer needs.

Essential Questions (3-5)

- 5. What are the components and importance of website?
- 6. How does databases and dynamic pages affect a website?
- 7. How does teamwork affect moral and distribution of work on websites?
- 8. What is the process of turning a vision to reality phase in business environment?
- 9. Why are a portfolio website relevant to school and the workplace environment?

Anchor Text(s)

New Perspectives on Adobe Dreamweaver CS5 – Gary B. Shelly, Dolores Wells, Jennifer T. Campbell - Cengage Learning 2012.

Short & Informational Texts (3-5)

ARTICLES

“MS Access is Here to Stay – And It will Continue to Exist in Near future”

<https://www.datanumen.com/blogs/ms-access-stay-will-continue-exist-near-future/>

“Why You Should Design and Code in Adobe Dreamweaver”

<http://thevisualcommunicationguy.com/2017/06/29/why-you-should-design-and-code-in-adobe-dreamweaver/>

“The Importance of a Portfolio”

<http://careercenter.cofc.edu/documents/portfolio.pdf>

Expected Proficiencies/Career and Life Skills

- Understand Dreamweaver and Databases
- Discuss Web API
- Demonstrate general and Dreamweaver-specific knowledge of best practices for designing a website, such as maintaining consistency, separating content from design, using standard fonts, and utilizing visual hierarchy projects and designs
- Learn and integrate Database activities into a website
- Demonstrate knowledge of project management tasks and responsibilities.
- Communicate with others (such as peers and clients) about design plans
- Defining a client website project with database integration
- Evaluating and presenting a client site

Formative & Summative Assessments

- Formative
 - Textbook activities Research assignments
 - In-class discussions
 - Quizzes
 - Group activities and presentation

- Questioning and discussion
- Journals
- Summative
 - Projects/Presentations
 - End-of-unit or chapter tests
 - End-of-term or semester exams

Resources (Websites, LMS, Google Classroom, documents, etc.)

- Lynda.com
- Canvas LMS
- Microsoft Office (Word, Excel, PowerPoint, Access)
- Instructional Videos
- Google Drive/Docs/Slides
- Knowledgebase
- YouTube videos
- w3schools.com

Suggested Time Frame:

28 Days

III. Instructional Strategies:

- Lecture
- Instructional videos (YouTube, MIT App Inventor Online Tutorials)
- Instructional demos (MIT App Inventor)
- Class discussions
- Slide shows and other visual data
- Strategy games to enhance critical thinking
- Collaborative hands-on projects
- Researching information

- Technical writing
- Debating
- Role-playing scenarios (TEAM PROJECT: Website for Small Business)
- Answering questions
- Extrapolating data
- Differentiated instruction
 - Students will be randomly placed into lab groups. Each group will be a mix of students with some/little experience to students with more experience. A project manager will be assigned to each group and they will distribute the remaining roles among the team members.
 - Students will collaborate to solve real-world scenarios, e.g. Small Business Project, Mobile App Development. Each student will bring his/her own strength to the group and assist others who are not as strong in a particular area.
 - Through lectures, hands-on scenarios, simulations, video demos, and SMART Board interactions, the students will be exposed to a variety of teaching methods that appeal to auditory, visual, and kinesthetic learners.

IV. Methods of Student Evaluation:

Assessment in a vocational area can be divided into four general categories—formal (graded), informal (ungraded), certification, and practical application.

Formal Assessments:

- Weekly Lab Projects (Formative)
- Weekly Quizzes (Formative)
- Chapter Review and Case Projects (Summative)
- Chapter/Unit Test (Summative)

Some of the informal assessments include, but are not limited to:

- Lecture re-cap and discussion – At the end of each lecture, the instructor and students discuss the day’s topic and provide insight and ask questions
- Canvas Collaborations – Students are sometimes working in groups. At the end of lab time, students are to exchange information, project data, lab reports, et al with their group members via Canvas or Google.

Practical application is the most important component to any career and technical area. It demonstrates that a student can put the learned information into action by applying it in a real-world scenario. Some practical application assessments include, but are not limited to:

- Real world labs – Students will perform hands-on activities with the equipment based on a given set of instructions. Upon completion, they must develop a lab report summarizing their findings.
- Professional performance – While academics and discipline are separate entities, they are conjunctive in this shop because acting in a professional manner during lab is of paramount importance. Therefore, students will be assessed on their behavior in the lab.
- Projects – There will be a project each trimester. Successful completion of the project demonstrates that the students can practically apply most (or all) of the unit’s concepts.

V. Scope and Sequence:

SKILLS TO BE LEARNED		I = Introduce D = Develop R = Reinforce M = Master
CRP1	Act as a responsible and contributing citizen and employee.	I, D

CRP2	Apply appropriate academic and technical skills.	I, D
CRP4	Communicate clearly and effectively and with reason.	I, D
CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.	I, D
CRP11	Use technology to enhance productivity.	I, D
CRP12	Work productively in teams while using cultural global competence.	I, D, R
9.3.IT.1	Demonstrate effective professional communication skills and practices that enable positive customer relationships.	I, D
9.3.IT.4	Demonstrate positive cyber citizenry by applying industry accepted ethical practices and behaviors.	I, D, R
9.3.IT.6	Describe trends in emerging and evolving computer technologies and their influence on IT practices.	I, D
9.3.IT.7	Perform standard computer backup and restore procedures to protect IT information.	I, D, R
9.3.IT.8	Recognize and analyze potential IT security threats to develop and maintain security requirements.	I
9.3.IT.10	Describe the use of computer forensics to prevent and solve information technology crimes and security breaches.	I
9.3.IT.12	Demonstrate knowledge of the hardware components associated with information systems.	I, D, R, M
9.3.IT.13	Compare key functions and applications of software and determine maintenance strategies for computer systems.	I, D
9.3.IT-SUP.1	Provide technology support to maintain service.	I, D, R
9.3.IT-SUP.2	Manage operating systems and software applications, including maintenance of upgrades,	I, D, R

	patches and service packs.	
9.3.IT-SUP.3	Apply appropriate troubleshooting techniques in resolving computer hardware, software, and configuration problems.	I, D
9.3.IT-SUP.4	Perform installation, configuration and maintenance of operating systems.	I, D, R
9.3.IT-SUP.5	Demonstrate the use of networking concepts to develop a network.	I, D
9.3.IT-SUP.6	Evaluate the effectiveness of an information system.	I, D
9.3.IT-SUP.7	Employ system installation and maintenance skills to setup and maintain an information system.	I, D
9.3.IT-SUP.8	Employ system administration and control skills to monitor the performance of an information system.	I, D
9.3.IT-SUP.9	Employ technical writing and documentation skills in support of an information system.	I, D
9.3.IT-SUP.10	Apply quality assurance processes to maximize information system operation.	I, D
9.3.IT-PRG.1	Analyze customer software needs and requirements.	I, D
9.3.IT-PRG.6	Program a computer application using the appropriate programming language.	I
9.3.IT-NET.1	Analyze customer or organizational network system needs and requirements.	I, D
9.3.IT-NET.2	Analyze wired and wireless network systems to determine if they meet specifications (e.g., IEEE, power and security).	I
9.3.IT-NET.3	Design a network system using technologies, tools and standards.	I
9.3.IT-NET.4	Perform network system installation and configuration.	I
9.3.IT-NET.5	Perform network administration, monitoring and support to maintain a network system.	I

VI. Course Textbooks, Instructional Resources & Software:

Student Resources	Teacher Resources
<p data-bbox="283 829 380 862">Digital</p> <ul data-bbox="331 906 766 1206" style="list-style-type: none">• MIT App Inventor• AI Companion App• Daily Lecture Slides (Canvas)• Fact sheets (notes)• Video lessons• Video demonstrations• Lab simulations• Formative assessments	<p data-bbox="1127 829 1224 862">Digital</p> <ul data-bbox="1176 906 1610 1401" style="list-style-type: none">• MIT App Inventor• AI Companion App• Daily Lecture Slides (Canvas)• Fact sheets (notes)• Video lessons• Video demonstrations• Lab simulations• Formative assessments• Custom exam creation• Student progress monitoring• Scoresheet based on criteria• Answer keys• Teacher resources

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6th Edition

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VII. Student Handout

Computer Science II is a full year course for students who have successfully completed Computer Science I and are continuing in the Academy of Information Technology. Students who complete the 4 year PCTI program are fully prepared to enter college with the advantage of having been introduced to many of the same topics they will experience thus placing them in an advantageous situation. During their second year of study, students are introduced to 3 major topics that will advance allow them to expand their Computer Science expertise attained in their first year of study. This includes learning to design a website for a small business using Technology Project Management, HTML, JavaScript and CSS, Creating Android Mobile Apps with the MIT App Inventor Open Source as well as an introduction to database concepts using MS Access.

PROFICIENCIES

- A. Demonstrate how to work safely in professional environment.
- B. Use resources to examine trends, certifications, and careers in Information Technology.
- C. Demonstrate the parts of the PC and their functions.
- D. Describe the benefits of the Client-Server Architecture
- E. Perform basic Android based mobile app development
- F. Perform JavaScript programming
- G. Perform basic HTML and CSS programming
- H. Build and maintain an MS Access database with all of the major objects.
- I. Follow the process of the Software Delivery Project Life Cycle
- J. Develop a troubleshooting approach to debugging software issues.
- K. Develop web based programming solutions to daily lab assignments as well as review projects and tests.
- L. Develop mobile based programming solutions to daily lab assignments as well as review projects and tests.
- M. Develop strategies and plans for course based instructor defined technology projects.
- N. Develop algorithms and flowcharts for upcoming programs based on problem statements

