

Course **Syllabus**

What you will learn in this course



Computing for College and Careers 1b: Refining Your Interests

You have looked at the building blocks of some technologies you use on a daily basis, and now it's time to dig even deeper to see how it can help determine your future! In this course, you'll analyze modern websites, learn design elements and principles, and even create your very own website. You'll learn to write algorithms, use common web languages, and explore some of the basics of AI all while becoming a good digital citizen. Lastly, you'll explore various careers in computing, learn about industry certifications, and see how a resume and portfolio can help you. Let's look to the future!

Unit 1: Web Design

Websites have become great tools for communicating with customers, buying goods and services, connecting with loved ones across the world, and distributing information and news. With the millions of websites in the world today, is it possible to make a website that is truly

inspiring and stands out among the crowd? Spoiler alert—yes, it’s possible! It just takes a little practice to learn how. We’ll also analyze some effective features of modern websites, learn design elements and principles, and even create your very own website.

What will you learn in this unit?

1. Describe the purpose of different types of websites
2. Identify the various elements of a website
3. Investigate and analyze web design elements
4. Explain how design principles can be applied to websites
5. Design, create, and publish an original website

UNIT 1 Assignments	
Assignment	Type
Unit 1 Critical Thinking Questions	Homework
Unit 1 Activity 1	Homework
Unit 1 Activity 2	Homework
Unit 1 Discussion 1	Discussion
Unit 1 Discussion 2	Discussion
Unit 1 Quiz	Quiz

Unit 2: Programming Basics

Do you know what language a computer speaks? It’s not English, Spanish, French, or Mandarin. It’s quite simple actually—it only uses 0’s and 1’s. Imagine only being able to communicate with 0’s and 1’s! That wouldn’t work out so well for humans, so we have developed other programming languages that allow us to communicate with computers through a translator. Are you ready to learn the language of computers and understand how software is written? Let’s go!

What will you learn in this unit?

1. Explain the purpose of programming
2. Compare and contrast generations and types of programming languages
3. Describe the stages in the software development life cycle

4. Discuss the role of problem solving and creativity in scientific studies and programming

UNIT 2 Assignments	
Assignment	Type
Unit 2 Critical Thinking Questions	Homework
Unit 2 Activity 1	Homework
Unit 2 Activity 2	Homework
Unit 2 Discussion 1	Discussion
Unit 2 Discussion 2	Discussion
Unit 2 Quiz	Quiz

Unit 3: Programming in Practice

From its humble beginnings in the 1950s, to practically running the world today, code has become an essential part of our lives. We use objects every day that are programmed, and algorithms play a foundational role in making the programs work. Many people do not understand what algorithms actually are, but you'll soon be fully prepared to comprehend, interpret, and write algorithms of your own. We'll apply our new skills by designing and developing a dino run game, using the popular web languages HTML, CSS, and JavaScript. It's going to be dino-mite!

What will you learn in this unit?

1. Discuss the pros and cons of algorithms
2. Differentiate among the control structures of algorithms
3. Create a simple computer program
4. Execute a simple computer program
5. Document a simple computer program

UNIT 3 Assignments	
Assignment	Type

Unit 3 Critical Thinking Questions	Homework
Unit 3 Activity 1	Homework
Unit 3 Activity 2	Homework
Unit 3 Activity 3	Homework
Unit 3 Discussion 1	Discussion
Unit 3 Discussion 2	Discussion
Unit 3 Quiz	Quiz

Unit 4: Networking

What does the word “network” mean to you? Maybe you have a network of friends, or perhaps you envision a way to meet new people by sharing information about yourself. The word network has been around for hundreds of years, but in the early 1800s, network began to mean a “complex, interlocking system,” and that is an apt description for today’s computer networks. ^[1] But don’t worry—we’ll break down the complexities and learn some cool information about networks. We’re going to peel back the layers on what exactly the internet is and how networks function. Let’s surf the net!

What will you learn in this unit?

1. Discuss the origin and evolution of networks
2. Compare and contrast types of networks such as client-server and peer-to-peer
3. Explain how network hardware and software functions
4. Describe each layer of the OSI model
5. Identify and troubleshoot common network problems

UNIT 4 Assignments	
Assignment	Type
Unit 4 Critical Thinking Questions	Homework
Unit 4 Activity 1	Homework
Unit 4 Activity 2	Homework
Unit 4 Discussion 1	Discussion

Unit 4 Discussion 2	Discussion
Unit 4 Quiz	Quiz

Computing for College and Careers 1b Midterm Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the **first** half of the course (Note: You will be able to open this exam only one time.)

MIDTERM Assignments	
Assignment	Type
Midterm Exam	Exam
Midterm Discussion	Discussion

Unit 5: Trends in IT

The future of IT has never looked brighter! There are some fascinating innovations here and around the corner that will not only make our lives easier but also more sustainable. From artificial intelligence that will continue to be integrated into our devices to the increased use of robotics in a variety of industries, get ready to see machines become more autonomous. Blockchain technology has the ability to revolutionize our personal and professional lives, not just through cryptocurrency, but also through money transfer, voting, and securing personal information. And clean tech is looking to stop and even reverse climate change. How will you be a part of this bright future?

What will you learn in this unit?

1. Explain the advantages and disadvantages of artificial intelligence
2. Describe how robotics are used in various industries
3. Consider applications of cryptocurrency and blockchain technology
4. Analyze the impact of technology trends on the environment

UNIT 5 Assignments

Assignment	Type
Unit 5 Critical Thinking Questions	Homework
Unit 5 Activity 1	Homework
Unit 5 Activity 2	Homework
Unit 5 Discussion 1	Discussion
Unit 5 Discussion 2	Discussion
Unit 5 Quiz	Quiz

Unit 6: Legal and Ethical Issues

Our conscience kicks in and tells us that certain actions are wrong. But is everything that is wrong also against the law? How do we tell the difference between unethical and illegal actions, especially in our digital world that seems to have so many issues that fall into a grey area? You'll learn all this and more as we discover the legal and ethical issues within computing. From protecting intellectual property to avoiding plagiarism to preventing piracy, you'll become familiar with a variety of issues. You will also learn what is involved with being a good digital citizen who respects, educates, and protects. Let's get started!

What will you learn in this unit?

1. Examine legal and ethical issues related to computers and the internet
2. Differentiate among types of intellectual property and the laws that protect them
3. Avoid plagiarism by citing sources correctly
4. Explain how to become a good digital citizen

UNIT 6 Assignments	
Assignment	Type
Unit 6 Critical Thinking Questions	Homework
Unit 6 Activity 1	Homework
Unit 6 Activity 2	Homework
Unit 6 Discussion 1	Discussion

Unit 6 Discussion 2	Discussion
Unit 6 Quiz	Quiz

Unit 7: Follow the Leader

The world always needs good leaders. But are leaders born or made? Is there hope for someone who doesn't identify as a natural-born leader to be effective in a position of leadership? How do different organizations use leadership and structure to achieve their goals? You probably have learned about leadership skills in the past, but we're going to dive into how we can develop these leadership skills to become an effective project manager. After this unit, you'll be prepared to put your leadership skills into action!

What will you learn in this unit?

1. Demonstrate leadership skills
2. Use collaboration skills and function as part of a team
3. Evaluate organizational structures and cultures
4. Apply project management skills such as planning, time management, and scheduling
5. Execute, monitor, and close a project effectively

UNIT 7 Assignments	
Assignment	Type
Unit 7 Critical Thinking Questions	Homework
Unit 7 Activity 1	Homework
Unit 7 Activity 2	Homework
Unit 7 Discussion 1	Discussion
Unit 7 Discussion 2	Discussion
Unit 7 Quiz	Quiz

Unit 8: Look to the Future

Do you dream about developing the next big video game? Is your passion cutting-edge web development? Or maybe you enjoy managing and supporting networks. Who knows—you may

even be eyeing a non-tech field, too! Whatever you are thinking about for the future, whether it's college, vocational training, or going straight into the workforce, you'll learn some tips and strategies for how to get there. We'll explore various careers in computing, take a self-assessment to see where your personality might thrive, learn about industry certifications, and see how a resume and portfolio can help you. The future is on its way!

What will you learn in this unit?

1. Complete a self-assessment to identify potential careers
2. Research careers and identify the education, skills, and experience required
3. Investigate computing certifications and their requirements
4. Describe how resumes and portfolios can help the job search process
5. Find important information within a job posting to determine whether it is a good fit

UNIT 8 Assignments	
Assignment	Type
Unit 8 Critical Thinking Questions	Homework
Unit 8 Activity 1	Homework
Unit 8 Activity 2	Homework
Unit 8 Activity 3	Homework
Unit 8 Discussion 1	Discussion
Unit 8 Discussion 2	Discussion
Unit 8 Quiz	Quiz

Computing for College and Careers 1b Final Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the **second** half of the course (Note: You will be able to open this exam only one time.)

FINAL Assignments

Assignment	Type
Final Exam	Exam
Final Exam Discussion	Discussion

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1. [https://www.etymonline.com/word/network#:~:text=network%20\(n.\),%2C%20canals%2C%20and%20railways](https://www.etymonline.com/word/network#:~:text=network%20(n.),%2C%20canals%2C%20and%20railways)) ↵

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