



Coding 1A

COURSE DESCRIPTION

Coding 1A

Learning to code is like learning a clandestine language, and now is your chance to get in on the secret! In this course, you will learn about the building blocks of coding. You'll explore how real-world problems can be broken into algorithms described through coding and then use the approachable and versatile coding language of Python to generate the output you're looking for. You'll cover both procedural and object-oriented programming and even create two text-based adventure games along the way. Are you ready to get in on the secret?

COURSE METHODOLOGY

- This is an inquiry-based course. Students will generate knowledge through online readings, asynchronous discussions with students and their instructor, interactions with online tutorials, and online and hands-on simulations.
- The instructor will act as a guide, a facilitator, an events planner, and a resource advisor. He/she will always be available through course message.
- The student must actively construct and acquire knowledge by being intrinsically motivated to succeed. To succeed, students must participate and complete all readings and activities. This course requires the student's active participation.
- Both formal and informal assessment methods will be used in the course. Informal assessment will include an evaluation of the quality and timeliness of participation in class activities. Formal assessment may include multiple-choice quizzes, tests, discussion board participation, and written assignments. A final exam will be given at the end of the course.

COURSE PARTICIPATION OBJECTIVES

This course for which you are registered is a college preparatory, academically rigorous course that covers an entire semester's worth of material. As such, it is important that you adhere to the following guidelines as you manage your time and commit to successfully completing all required coursework:

1. The requirements for this course are equivalent to completion of minimum of 90+ hours of class instruction at a traditional on-site high school
2. Assignments must be submitted for each unit as they are completed so that the teacher may review and assess your performance. Do not hold your work, you must submit each unit's homework as it is completed, demonstrating weekly assignment completions

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3. You must log in regularly to your course to demonstrate continued participation, and completion of all course requirements, including assignments, assessments and discussion forums
4. You must complete your individual work and any incident of suspected cheating, plagiarism or collaboration on assignments violates the academic integrity expectations outlined at the time of your enrollment and can result in failure of the course or further action as deemed appropriate

Citizenship

Students are expected to conduct themselves in a responsible manner that reflects sound ethics, honor, and good citizenship. It is the student's responsibility to maintain academic honesty and integrity and to manifest their commitment to the goals of NUVHS through their conduct and behavior. Students are expected to abide by all NUVHS policies and regulations. Any form of academic dishonesty, or inappropriate conduct by students or applicants may result in penalties ranging from warning to dismissal, as deemed appropriate by NUVHS.

Communication

Throughout this course students will need to be in close contact with their instructor and fellow students. Students are expected to communicate via course message and electronic discussion boards. Therefore, students should plan on checking their course messages at least three times a week and participate in the discussion boards during the weeks they are live.

Instructors strongly encourage and welcome open communication. Clear, consistent, and proactive communication will ensure a successful experience in this course. It is the student's responsibility to notify the instructor immediately if and when a personal situation occurs that affects his/her performance in this class. Being proactive with communication will result in a quick solution to any problems that may occur.

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COURSE OUTLINE

Unit 1 – Unit 1: Let’s Get Coding!

Are you ready to run your first code? Let’s jump right in! But first, we’ll do a quick review of what makes a computer a computer and how everything works together to create the technology most of us take for granted. By understanding the fundamental layers of how computers work, we’ll be able to dive confidently into programming with PythonAnywhere and create our first code.

Learning Objectives

- Describe how computers process information
- Identify the characteristics of major operating systems
- Understand how information is stored in computer memory
- Manage and create files using the PythonAnywhere programming environment
- Generate basic code structures in PythonAnywhere
- Explain how variables and comments help keep code organized

Activities

Unit 1 Text Questions	Homework	10 points
Unit 1 Online Lab Questions	Homework	10 points
Unit 1 Discussion 1	Discussion	5 points
Unit 1 Discussion 2	Discussion	5 points
Unit 1 Quiz	Quiz	15 points

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Unit 2: Give Your Code Some Structure

To get good at coding, you need to be comfortable thinking about things as algorithms—or patterns. Really, anything we do in a repeatable, step-by-step way is an algorithm, so you’ve had a lot of practice in daily life. We will explore common coding algorithms and look at techniques like sequence, selection, and iteration, which can make your code a lot more concise. Once you get the hang of things, we’ll look at how to create your first game out of code!

Learning Objectives

- Describe how algorithms work in Python
- Explain how operators are used in Python
- Demonstrate how selection and iteration help us solve problems through code
- Compare values of several numbers with Boolean variables and relational operators
- Create your own text-based adventure game using sequencing, selection, and repetition

Activities

Unit 2 Text Questions	Homework	10 points
Unit 2 Online Lab Questions	Homework	10 points
Unit 2 Discussion 1	Discussion	5 points
Unit 2 Discussion 2	Discussion	5 points
Unit 2 Quiz	Quiz	15 points

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Unit 3: Organizing Your Data

You might be used to organizing your video games, your photos on a smartphone, your books, or even your clothes, but have you ever thought about organizing your data while coding? Your socks won't organize themselves, and neither will your raw data. So, you need to use different drawers or containers for data. These containers are called data structures. There are several cool ways we can use them in our Python programs. Whether we're talking about making a list, stacking books, or waiting in line, there's a data structure for it!

Learning Objectives

- Create a list data structure
- Utilize a dictionary data structure to pair states and capitals
- Define and implement tuples and sets
- Determine when to use a stack data structure
- Understand how a queue functions in Python
- Use trees and graphs in PythonAnywhere

Activities

Unit 3 Text Questions	Homework	10 points
Unit 3 Online Lab Questions	Homework	10 points
Unit 3 Discussion 1	Discussion	5 points
Unit 3 Discussion 2	Discussion	5 points
Unit 3 Quiz	Quiz	15 points

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Unit 4: Programming Tools

You've had some practice now with Python, but it's time to add even more tools to your tool belt! There's so much more to programming than simply writing code. We have resources like libraries, APIs, version control, and the software development life cycle to help us. In this unit, we'll learn how to sharpen our tools and work together with other programming professionals to make the magic happen! We'll also write some pretty neat code along the way!

Learning Objectives

- Import and use Python libraries in programs
- Describe the roles of APIs and collaboration tools in developing software
- Differentiate among the phases of the software development life cycle
- Write code using a structured design approach
- Discuss the basics of object-oriented programming

Activities

Unit 4 Text Questions	Homework	10 points
Unit 4 Online Lab Questions	Homework	10 points
Unit 4 Discussion 1	Discussion	5 points
Unit 4 Discussion 2	Discussion	5 points
Unit 4 Quiz	Quiz	15 points

Midterm Exam Objectives

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

Midterm Exam Activities

Midterm Discussion	Discussion	5 points
Midterm Exam	Exam	50 points



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Unit 5: Let's Get Object-Oriented

We can think of coding much like learning a language. We learn individual words, yes, but we also have to understand the structure those words need to appear in to make sense. We've covered all that, and now, we'll expand on that knowledge by using object-oriented design to create more advanced projects. Do you remember the adventure game we worked on a bit ago? It's time to do a deep dive into object-oriented programming by crafting a new text-based adventure game with even more fun options, using everything you've learned so far about Python and adding some exciting new skills along the way.

Learning Objectives

- Understand how engines function in game design
- Define and describe basic object-oriented concepts such as class, object, attribute, and method
- Create classes that contain scenes for an adventure game
- Use inheritance to implement subclasses
- Generate random numbers for use in a game
- Instantiate objects with a dictionary data structure

Activities

Unit 5 Text Questions	Homework	10 points
Unit 5 Online Lab Questions	Homework	10 points
Unit 5 Discussion 1	Discussion	5 points
Unit 5 Discussion 2	Discussion	5 points
Unit 5 Quiz	Quiz	15 points



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Unit 6: Testing and Debugging

You've just written the coolest program of your life and are super excited to test it out...but it won't run because of errors. Don't be too disappointed—it happens to even the most experienced programmers. The good news is that you'll soon have the skills and tools to test your program thoroughly and make the necessary changes. So, don't delay—start testing now!

Learning Objectives

- Describe and identify common programming errors
- Solve logic errors in your programming
- Explain the goals of program testing
- Analyze how testing is used throughout the software development process
- Write a test plan with test cases
- Gather and use feedback from peers and professionals

Activities

Unit 6 Text Questions	Homework	10 points
Unit 6 Online Lab Questions	Homework	10 points
Unit 6 Discussion 1	Discussion	5 points
Unit 6 Discussion 2	Discussion	5 points
Unit 6 Quiz	Quiz	15 points

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Unit 7: Computer Science Ethics

There's a lot going on in the field of computer science ethics. From policies and legislation to gray areas, ethics will always keep you on your toes! Let's explore some of the impact that technology has had on the world and our personal lives as well as how we can use that technology ethically and responsibly. We'll become aware of some issues and injustices as well as how legislation affects our privacy and security. Are you ready to become a digital citizen? Let's go!.

Learning Objectives

- Discuss how computing has impacted business and commerce
- Analyze the personal and societal effects of technology
- Evaluate the impact of the digital divide
- Use computers ethically and responsibly
- Analyze the impact of government legislation on privacy and security

Activities

Unit 7 Text Questions	Homework	10 points
Unit 7 Online Lab Questions	Homework	10 points
Unit 7 Discussion 1	Discussion	5 points
Unit 7 Discussion 2	Discussion	5 points
Unit 7 Quiz	Quiz	15 points

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Unit 8: Become a Polyglot Programmer

Programming involves more than just learning a language and writing code. You need to be up to speed on how languages work on a deeper level and on which languages are best suited for which projects. We'll take a closer look at programming languages and transition into how programmers approach projects and accomplish tasks. Then, we'll explore some exciting programming opportunities in your future and how to make yourself a marketable programmer employers will be lining up to hire!

Learning Objectives

- Explain the program execution process, including differences between compiling and interpreting
- Differentiate programming paradigms and understand when they are useful
- Use a variety of tools and resources to plan and execute a programming project
- Investigate specializations and job opportunities within the programming field
- Cultivate the practices of lifelong learning, self-awareness, and self-management

Activities

Unit 8 Text Questions	Homework	10 points
Unit 8 Online Lab Questions	Homework	10 points
Unit 8 Discussion 1	Discussion	5 points
Unit 8 Discussion 2	Discussion	5 points
Unit 8 Quiz	Quiz	15 points

Final Exam Objectives

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from units five to eight in this course – the last four units. (Note: You will be able to open this exam only one time.)

Final Exam Activities

Class Reflection Discussion	Discussion	10 points
Final Exam	Exam	50 points

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HOW YOU WILL BE GRADED

For critical thinking questions, there are no right or wrong answers. For example, a question on your thoughts on why you think people are shy is a pretty open-ended type of question. Grades will be based on the depth of personal insight you present. **Do not simply agree or disagree** with an insight question. We are looking for critical thinking and possibly a related personal experience with the question.

It is important to provide detailed answers for insight/opinion questions.

For review questions, you should be produce a more academic answer. For example, "What two categories are norms divided into?" This type of direct question requires a specific answer. Please use full sentences and proper grammar.

When submitting paragraphs, use these guidelines.

1. The first, second or last sentence contains the main idea and key words from the question or assigned topic.
2. Paragraph contains one to three explanatory sentences.
3. Paragraph contains two to four sentences about specific details related to question.
4. Details are colorful, interesting and appropriate.
5. Paragraph ends with a good closing sentence that refers to the main idea without repeating it.
6. Free of spelling and grammatical errors.

GRADE SCALE

The following grading scale will be used to determine your final letter grade.

Letter Grade	Percentage Earned
A	95%+
A-	90% - 94.9%
B+	87% - 89.9%
B	84% - 86.9%
B-	80% - 83.9%
C+	77% - 79.9%
C	74% - 76.9%
C-	70% - 73.9%
D+	67% - 69.9%
D	64% - 66.9%
D -	60% - 63.9%
F	59% and lower

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SUPPORT

At NUVHS you will have access to multiple support teams. Who you contact will depend on the questions you have. Always start by contacting your teacher through the Message Center in the course. Your teacher should be able to answer your question, but if they can't, then they will direct you to another support team. If you have questions about any of the course content, your grades, or course policies, you should contact your instructor.

For questions about your enrollment, transcripts, or general school-wide policies, you can contact **NUVHS Student Services** at info@nuvhs.org or by phone at 866.366.8847. For example, if you would like to withdraw from your course, you should contact Student Services. Please note that a refund for your course can only be obtained if you drop within the first seven days of enrolling in the course.

For help with login/password issues, or other technical issues specific to the Blackboard website, you can contact the team at [National University Blackboard Learn](#). They can also be reached by phone at (888) 892-9095.

EXPECTED SCHOOL-WIDE LEARNING RESULTS (ESLRs)

Engaged Learners

- Demonstrate self-directed learning skills such as time management, and personal responsibility through the completion of course requirements
- Develop an understanding of their own preferred learning styles to enhance their overall academic potential
- Incorporate effective and relevant internet and multimedia resources in their learning process to broaden their knowledge base

Critical Thinkers

- Effectively analyze and articulate sound opinions on a variety of complex concepts
- Illustrate a variety of problem-solving strategies that strengthen college preparation and workforce readiness
- Formulate a framework for applying a variety of technology and internet-based research to enhance information literacy and collaborative thinking

Effective Communicators

- Demonstrate awareness and sensitivity to tone and voice in multiple forms of communication
- Express concepts and ideas in a variety of forms
- Enhance communication skills through the use of media rich or other technology resources



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Global Citizens

- Appreciate the value of diversity
- Understand the range of local and international issues facing today's global community
- Demonstrate awareness of the importance of cultural sensitivity and social responsibility in the 21st century