NATIONAL UNIVERSITY
VIRTUAL HIGH SCHOOL

COURSE SYLLABUS

Coding 1B

COURSE DESCRIPTION

Coding 1B

Let's continue to cultivate an understanding of programming languages and expand on website development. You will learn the difference between web development and web application development as well as further explore Advanced Python, HTML, and JavaScript. You will also examine software engineering concepts, learn more about security, privacy, and ethics in technology, and explore the wide variety of careers in computing.

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

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: Get the IDE(a)?

What is the difference between soft- and hardware? That's a pretty simple question isn't it? But do you know how exactly the two play together in order to create the platforms that development and coding take place on? From the basics of hardware and software environments to specific tool-kits needed for development, we will be sure to cover all of this and more. After all, a solid knowledge of the necessary and available tools for development of any kind is essential in order to fully realize your potential as a developer, programmer or other IT expert.

Learning Objectives

- Identify, explain, and compare hardware components

- Understand different software environments and explain what makes them unique

- Briefly describe different sets of development tools

- Accurately explain what dev tool-sets are and can be used for

- Analyze why different tool-kits are used for different purposes

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: The Software - Human Interface

At the end of the day, which is more important—having a great interface for users or having well-built software that gets the job done? It's a trick question. The two are equally important, but some programmers assume that the interface is more of an afterthought, something to be added when all the coding is done. This could not be further from the truth! In this unit, we will explore in detail why user interfaces are one of the most important pieces of any software or development.

Learning Objectives

- Define, explain, and manipulate different data types

- Effectively prompt for, validate, and constrain input information

- Design simple user interfaces and incorporate graphics into them

- Describe different GUI libraries and toolkits

- Perform simple tasks in PythonAnywhere and Trinket.io

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

Unit 3: Coding Structures

In previous units, you've gotten a taste of what you can do with Python. In this unit, you'll develop your coding skills by learning about some of the most important features of Python and how to use them. You'll learn how to create a program that can run different parts of the program in different situations. You'll discover how to make something happen repeatedly—without having to code it over and over again—and you'll see how you can organize your variables into groups.

Learning Objectives

- Describe, develop, and program selection statements

- Explain, create, and use loops

- Describe internal documentation and effectively use comments

- Describe, create, and use lists

- Understand, create, and use arrays, both single and multidimensional

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

Unit 4: Modular Programming

In the last unit, you got your feet wet with Python programming, and you've learned how to create some basic programs. Now, you will be able to expand your skills by learning how to create and use your own functions. Also, you'll learn how to prevent errors from crashing your programs.

Learning Objectives

- Describe the process for creating functions and create your own functions

- Demonstrate the ability to pass arguments into functions

- Explain the difference between global and local variables and select the appropriate variable to use

- Describe and use recursive functions

- Describe strategies for avoiding errors and apply those strategies to a programming task

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: Data Security

Data security is something of a hot topic across the globe. Everywhere, people are taking steps to secure their information and companies are being forced to think about what to do with data due to privacy protection laws. If you were to go by the news alone, you'd think data security was bad almost everywhere, with banks and major companies reporting data breaches. How does this happen? You may have a rough idea of how companies are breached, but the truth is actually a lot more technical. So, let's take a look at data security, both how it can be exploited, and also how it can be protected.

Learning Objectives

- Explain the principles of cryptography, including encryption, digital signatures, and authentication methods

- Identify computer, network, and software security risks and vulnerabilities

- Design appropriate system of controls and security measures

- Implement a basic security method (encryption, digital signature, or authentication)

- Describe how to recover a machine from systems failure or virus

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

Unit 6: Top-Notch Programming

Now that you've learned about lists and loops, you have some powerful Python programming tools that you can use when you write programs. In this unit, we'll build on that knowledge so that you can program more efficiently. You'll also learn about some classic algorithms used in programming. And, you'll discover the most common ways that professional programmers improve their code.

Learning Objectives

- Use Python efficiently to create lists, access functions, and import modules

- Explain and adapt classic algorithms in Python

- Develop algorithms to solve computer programming problems

- Describe and use common peer code review techniques

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

Unit 7: Developing Web Solutions: Part 1

Learning the theories of coding and Python is one thing, but practicing in the context of a complete project is something else entirely. Completing separate tasks and assignments is a great start towards a project, but in order to get to know every part of the development life-cycle of a piece of software, it's necessary to do just that—so get ready to create your own piece of software as part of this project.

Learning Objectives

- Work as part of a structured team in assigned roles

- Create the environment necessary for productive work (i.e., research, flowcharts, etc.)

- Structure dynamic websites and design interfaces and solutions for them

- Build front-end, client-facing websites with a full-stack of HTML, CSS, Python and Django in the cloud

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

Unit 8: Developing Web Solutions: Part 2

Finishing a project is always more difficult than starting it—the team is running out of motivation and energy. Some of the initial ideas didn't work out and some aspects are running late—that is the reality of being a developer. Being able to see it through to the end, however, is the mark of being a good developer. Seeing that big idea completed and ready for usage is a great feeling—especially after all the hard work you put into it!

Learning Objectives

- Describe the structure of back-end coding

- Test and debug your code

- Launch and use your finished application

- Explain the connection between databases and websites

- Write and execute test scenarios as part of a project

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

COURSE SYLLABUS

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