

# CPSC 121 Computer Science I

## Syllabus Spring 2020

[Gonzaga University](#)

*(Note: syllabus subject to change, your instructor will make an announcement if changes occur – Last updated: 1/14/2020)*

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### Instructor Information

Instructor: [Daniel Olivares](#), PhD

Office: Herak 309A

Office phone number: 509-313-5753

Email: [olivares@gonzaga.edu](mailto:olivares@gonzaga.edu) *(All course-related messages should be sent via Canvas when possible)*

Office Hours: Monday, Wednesday 3:05pm – 4:05pm, Thursday 10:45am – 12:45pm, and by appointment.

### TAs

Kelly Colson

Email: [kcolson@zagmail.gonzaga.edu](mailto:kcolson@zagmail.gonzaga.edu)

Office Hours: TBD

Nora El Naby

Email: [nelnaby@zagmail.gonzaga.edu](mailto:nelnaby@zagmail.gonzaga.edu)

Office Hours: TBD

### Course Information

- Techniques of problem-solving and algorithmic development. An introduction to programming. Emphasis is on how to design, code, debug, and document programs using good programming style.
- Credits: 3.00
- College: School of Engineering/Applied Science (SEAS)
- Department: Computer Science
- Prerequisites: None

### Description

CptS 121 is a first course ("CS 1") in computer science for majors. In this course, we use the C++ programming language to explore the fundamental concepts, constructs, and techniques of modern computer programming, including functional decomposition, data structures, and software engineering. The primary aim of this course is to give you a thorough introduction into problem solving, algorithm discovery, and program design in C++. Some of these concepts include, but are not limited to, the following:

- Algorithm design
- Program design and implementation
- Software processes
- Data structure design and implementation

## Course Times and Location

- Section 01: 1:10pm - 2:00pm; Monday, Wednesday: Paccar 105, Friday: Herak 223
- Section 02: 2:10pm - 3:00pm; Monday, Wednesday: Paccar 105, Friday: Herak 223

## What we will Learn

Students who successfully complete this course will be able to:

1. Perform basic algorithm design and analysis (*a*)
2. Demonstrate a basic understanding of computer organization relevant to programming (*c,f,i*)
3. Demonstrate the ability to use fundamental programming constructs including assignment statements, Boolean expressions, iteration (for and while loops), conditional statements, defining and calling functions, console input/output, and using arrays (*a,i*)
4. Describe the compilation process (*i*)
5. Solve computational problems using the C++ programming language (*a,b,c,i,k*)
6. Demonstrate good practices in program design and development (*a,i,k*)

Outcomes:

- a. An ability to apply knowledge of computing and mathematics appropriate to the discipline
- b. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- c. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
- i. An ability to use current techniques, skills, and tools necessary for computing practice.
- k. An ability to apply design and development principles in the construction of software systems of various complexity.

## Course Materials

### Course Website

Canvas LMS: <https://canvas.instructure.com/>

**Note:** ALL course materials will be found on the Canvas LMS.

**Note2:** Please use the indicated URL, do not Google search for Canvas and use the first link in the results! This can lead to trying to log into the wrong canvas system and the false belief that you are locked out of your account.

## Schedule

*For an up-to-date and detailed schedule, please see the downloadable version available on the course website.*

### Course Topics

- a. Basic algorithm design and analysis
  - i. Examples drawn from various problems utilizing different programming
  - ii. constructs (assignment, conditions, iteration) Informal comparison of algorithm efficiency (e.g., operation counts)
- b. Basic computer organization relevant to programming
  - i. Bits, bytes, and words
  - ii. Numeric data representation and number bases
  - iii. Representation of non-numeric data (e.g., ASCII)
  - iv. Basic organization of a von Neumann architecture
  - v. Basic instruction fetch, decode, and execution cycle

- vi. Basic high-level idea of machine code instructions
- vii. Compilation stages
- c. Introductory programming in C++
  - i. Variables and primitive data types (e.g., numbers, characters, Booleans)
  - ii. Expressions and assignments
  - iii. Conditional statements (if-else-else if and case statements)
  - iv. Iterative control structures (for, while, and do loops)
  - v. Calling and defining functions with parameter passing
  - vi. Arrays (including two dimensional arrays)
  - vii. Basic string and string processing (via the string class)
  - viii. Console I/O
- d. Program design and development
  - i. Abstraction (process and data)
  - ii. Program decomposition
  - iii. Documentation and program style
  - iv. Debugging and testing strategies
  - v. Static typing
- e. Emphasis throughout on programming to solve problems within one or more application areas (such as game development, cryptography, numerical analysis, statistics, graphical and image processing, robotics, embedded systems, etc.)

## Communication

We will use Canvas to communicate, submit assignments, and view grades. A URL invitation link will be sent to your official @zagmail.gonzaga.edu email to provide course access.

*Note: Please use Canvas as the primary communication method for course-related messages. I will monitor email as well but using Canvas is the preferred communication method. This will increase your message visibility and reduce likelihood of emails getting flagged as spam or getting lost in transit. Further, **any course-related emails should be sent from your official @zagmail.gonzaga.edu student email.***

Additionally, [Discord](#) (free to use) will be used to augment class communication and facilitate digital office hours—ask questions and discuss topics with other students in the class, TAs, and the instructor. Discord supports voice and text communication as well as screen sharing capabilities (see *Canvas for server invite URL*).

**All communication methods are not to be used to share code solutions** (see *academic honesty policy*). You can, however, post high level code explanations and/or snippets of pseudocode. I will also post/email important information to you through Canvas and Discord announcements channels/feed. **You are expected to check announcements on Canvas and your GU email regularly.**

## Textbooks

**Required:** Programming in C++ (a zyBooks book). This is an online interactive textbook. Follow these instructions to gain access to the book:

1. Sign in or create an account at [learn.zybooks.com](https://learn.zybooks.com)
2. Enter zyBook code: **GONZAGACPSC121OlivaresSpring2020**
3. Subscribe

A subscription is **\$58** and will last until **May 22, 2020**. Students will be able to subscribe until April 23, 2020.

#### Additional Notes:

- *You are required to register with your official @gonzaga.edu student email.*
- *Please enroll in the section you are officially registered for. If you switch sections, please communicate this to your instructor as soon as you are officially in a new section.*
- *Though access to the digital book is not indefinite, you may print (or download as PDF) the zyBooks contents during subscription time to maintain an offline, non-interactive, copy of the book.*
- *If you have any difficulty with or questions about zyBooks usage, support is available at the zyBooks help desk:  
<https://zybooks.zendesk.com/hc/en-us/sections/360001556914-Students>*

**Recommended:** *Starting out with C++: From Control Structures through Objects* by Tony Gaddis. 9th Edition. Click [here](#) for the Amazon link. *Note: older editions are likely just as helpful for major concepts though order of content and/or examples may have changed. The zyBook required for this course is tailored to this edition of the text.*

### Required Hardware

A laptop adhering to GU SEAS requirements. Click [here](#) to learn more about the requirements.

*NOTE: You are expected to bring your laptop to class regularly to complete and participate in in-class activities and assignments.*

### Required Software

[VirtualBox](#), which is available for Windows, MacOS, and Linux.

## Course Environment

This is an *active learning class*. You are expected to come to class prepared, actively attend and participate in class, and to participate regularly in discussions on Canvas outside of class (*Discord involvement is not required though will provide additional opportunities to communicate with your peers and seek help*). In class, we will be working several coding/computing tasks and ***it is expected that you will bring your laptop and actively participate.***

### Food & Drink Policy

Please respect the specific classroom food/drink policy, e.g., rooms with computer workstations will not allow food or drink.

## Course Grading

### Assignment Weights

- In-class participation (7%)
- In-class quizzes (10%)
- zyBooks activities (10%)
- Programming assignments (30%)
- Exams (43%)
  - Exam 1 (10%)
  - Exam 2 (10%)
  - Exam 3 (11%)
  - Lab final exam (12%)

## Assignment Categories

### (Optional) Video Lectures/Quizzes

Lecture materials for this class are available as pre-recorded videos and are available online for viewing (*Thank you Dr. Gina Sprint!*). Videos and their corresponding activities will match material taught during the semester and I encourage you to use these as an additional learning resource. Online video quizzes (VQs) may be made available through the semester and can be used to test your understanding of course content.

### In-class Participation

In-class participation is expected and is a vital part to successful completion of this course. I understand that you may need to miss class occasionally for valid reasons. For this reason, your **three lowest class participation scores will be discarded**—that is, you will receive three free attendance/participation credits. Any discrepancies in participation need to be brought to my attention within a week of the posted grade.

In-class participation credit will be given based on submission of in-class activity artifacts (i.e. work done during class) via paper and/or Canvas assignment/quiz submissions. Note that you will need to be on a Wi-Fi enabled device connected to the Gonzaga Wi-Fi in order to access in-class participation assignments/quizzes.

### In-class Quizzes

For frequent practice with memory-retrieval and problem solving, there are regular in-class quizzes (IQs). The in-class quizzes are either:

- Team quizzes: You consult with your team about the solution to the problem. You submit your solution to the problem individually. In this manner, your grade for the quiz is not dependent on your teammates.
- Individual quizzes: You come up with the solution to the problem on your own and submit your solution to the problem individually.

Note: *I will drop your 2 lowest IQ scores.* This means that you are given 2 IQ "freebies" that excuse your failure to submit an IQ for any reason (e.g. missing class).

### Programming Assignments

You will be given several programming assignments (PAs) to complete. All C++ code written in assignments must adhere to the recommended CPSC 121 C++ Style and Coding Standards (see Canvas files for this document). Please upload assignments as directed on each assignment to the corresponding assignment in Canvas. *See the late work section for the PA late submission policy.*

### zyBooks Textbook Activities

You will be graded for completing participation (5% of total grade) and challenge activities (5% of total grade) in the zyBooks textbook. Completing 85% of participation activities and (separately) challenge activities for a chapter constitutes full credit for the participation activities and challenge activities, respectively. Note that each category of activities for a chapter (participation and challenge) is scored separately and is scored all or nothing. **Late completion of zyBook participation or challenges will not receive credit.**

### Exams

We will have three exams and one lab final exam in this course. **Please see the course calendar for your midterm exam dates.** The lab final exam will be held on:

- Section 01: Thursday, May 7 ..... 1:00 pm to 3:00 pm
- Section 02: Tuesday, May 5 ..... 6:00 pm to 8:00 pm

Exams may be rescheduled for students that have **valid excuses**. To increase your chances of your excuse being determined "valid", notify the instructor no less than two days in advance if you are going to miss an exam

*Note: Final exams may not be taken early. You must take your final exam at the time listed above for the course section you are enrolled in.*

## Grading Scale

In this course, your grade will be tracked as a percent, which will be mapped to a letter grade.

Please see the table for the conversion.

93-100%	A	73-76.99%	C
90-92.99%	A-	70-72.99%	C-
87-89.99%	B+	67-69.99%	D+
83-86.99%	B	60-66.99%	D
80-82.99%	B-	0-59.99%	F
77-79.99%	C+		

## Contesting a Grade

If you believe that a mistake has been made with grading an assignment or exam, *please speak with me **within one week (but no sooner than 24 hours) of the assignment or exam being returned***. Do not wait until the end of the semester to discuss any grade changes. You need to constantly be aware of how you are performing in the class. Thus, there will not be any surprises at the end of the semester when grades are to be formally submitted. You should be able to view your grades via Canvas. These will be updated regularly.

Note: the grades in Canvas may just be raw scores and not be weighted according to the ones described here. Thus, be sure that you keep track of these weights so that you are not surprised by a change in your overall grade at the end of the semester.

## Course Policies

### Late Work

**Deadline reminders are a courtesy, not a requirement. You are responsible to follow the course calendar and be aware of provided due dates!** All assignments are due by the established due dates and times (see the course schedule) with no late work accepted unless otherwise stated.

**Programming Assignments (PAs)** may be turned in up to two days late (the weekend counts as one day), at a penalty of 10% per 24 hours late. Forty-eight hours after the assignment is due, you may *no longer hand in the PA for credit*.

**ZyBook activities** are not accepted late.

Even if you fail to submit an assignment, I encourage you to work through the assignment and seek help as needed in order to ensure you understand the material completely.

If an emergency occurs, I will accommodate the student as much as possible. Make-up exams will not be possible unless the student speaks with me at least two days in advance.

Emergencies do occur and rescheduling of exams because of these is up to my discretion.

**Submission Tips:** Do not plan to submit your assignment at the last minute! Submit early and often. You are allowed multiple submissions and are not penalized for submitting more than once. Your latest submission will be graded unless otherwise noted.

## Attendance

The [Gonzaga attendance policy](#) on absences stipulates that the maximum allowable absence is two class hours (100 minutes) for each class credit. For three-credit classes, the maximum absence is, therefore, six class hours (300 minutes). Classes scheduled to meet for more than 50 minutes have more than one class hour for each meeting; for example, a class which meets for 75 minutes has one and one-half class hours for each scheduled meeting. Instructors may report absences to the Registrar's Office, which will in turn notify the students. The grade given for excessive absences is a "V," which has the same effect as "F" (Fail) and is counted in the GPA. This outcome can be appealed to the Dean of the College/School in which the course is offered.

### What does this mean for you?

*If you miss six (6) 50-minute class periods over the course of the semester you can be given a "V" grade which will appear on your transcript as an "F."*

## Office Hours

You are strongly encouraged to take advantage of office hours and/or make an appointment to meet with me if you have questions about the course material. I am more than happy to help you and office hours are a great way to get one-on-one help with the material.

As an alternative to face-to-face office hours, I will also be holding digital office hours via the class Discord server which provides text and voice communication augmented with screen sharing.

**Note:** Even though programming assignments are noted as individual assignments, this does NOT mean that you are not allowed to get help with the assignments. You are encouraged to make use of help from your instructor, TAs, or tutoring services provided the work you submit is your own (that is, someone else did not produce the work you are submitting).

## Use of Electronic Devices in Class

Please do not make inappropriate use of electronic devices during class times (e.g., laptops, tablets, or phones). These devices should not be used during class to browse the web, text/instant message, check email, etc. Also, please be sure to put your phone in "silent" mode during class.

## Academic Integrity Policy

### University Policy

You are expected to follow the university policy on academic honesty. Academic honesty is expected of all Gonzaga University students. Academic dishonesty includes, but is not limited to cheating, plagiarism, and theft. Any student found guilty of academic dishonesty is subject to disciplinary action, which may include, but is not limited to, (1) a failing grade for the test or assignment in question, (2) a failing grade for the course, or (3) a recommendation for dismissal from the University. A complete copy of Gonzaga's Academic Honesty policy can be found at [course catalog](#).

### CPSC 121 Policy

For this course both collaborative and individual work will be required.

- Collaborative work includes zyBooks activities, some IQs, and some PAs (I will clearly state on the assignment specification if it is collaborative).

- You are RESPONSIBLE for knowing all material involved in a collaborative assignment.
- Individual work includes some IQs, some PAs (I will clearly state on the assignment specification if it is collaborative), and exams

All individual work must be completed alone. Do NOT work with any team members on individual assignments. You may discuss ideas with team members about problems related to individual assignments, but do not discuss implementation details. Discussing implementation details includes (**but is not limited to**):

1. Copying/taking a picture of another student's code/work
2. Letting another student copy/take a picture of your code/work
3. Sending your code/work to another student (i.e. digitally or in print)
4. Receiving another's student code/work (i.e. digitally or in print)

Note: If you use content from sources other than the ones provided by the instructor (e.g. textbook, notes, etc.), **cite the source in your code**.

If are unsure of whether a situation might be considered cheating, be cautious and don't do it. If help is required, please ask the instructor for guidance. I'm always more than willing to help! Any instances of plagiarism will be reported to the Academic Integrity Board.

**Code plagiarism software will be used to check for code similarity.**

## University Statement Regarding Course Expectations

As a Jesuit university that seeks to provide an equal opportunity to learn for all students, this course is offered with the expectation that students are here voluntarily, and understand that the university expects all interactions relating to its courses to occur in the context of a professional academic work environment that is welcoming and accessible to all students regardless of gender, race, ethnicity, religion, disability, sexual orientation or identity and any other non-merit factor in educational programs or activities. This environment includes virtual course environments, such as Canvas, and **any course-related communications via e-mail and social media**. We strive to create a healthy environment conducive to intellectual honesty and free inquiry; as such, behaviors which constitute harassment, discrimination, or hostile and/or inappropriate conduct will not be tolerated, and faculty, staff and administrators will take action to ensure such matters are addressed promptly and appropriately. For inquiries or concerns about non-discrimination or the complaint process at Gonzaga, contact the Office of Equity and Inclusion, Business Services Center, 102 E. Boone Avenue.

## University Note on Harassment, Discrimination and Sexual Misconduct

Consistent with its [mission](#), Gonzaga seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX and Gonzaga's policy prohibit gender-based harassment, discrimination and sexual misconduct. Gonzaga encourages anyone experiencing gender-based harassment, discrimination or sexual misconduct to talk to someone from the Campus and Local Resources list found in the Gonzaga's Harassment and Non-Discrimination Policy.

It may be helpful to talk about what happened in order to get the support needed and for Gonzaga to respond appropriately. There are options for support and resolution, namely confidential support resources, and campus reporting and support options available. Gonzaga will respond to all reports of sexual misconduct in order to stop the harassment or misconduct, prevent its re-occurrence and address its effects. Responses may vary from support service referrals to formal investigations.



As a faculty member, I want to get you connected to the resources here on campus that can help you in this situation and therefore will report all incidents of sexual misconduct and thus cannot guarantee confidentiality. I will report all incidents of gender-based harassment, discrimination, and sexual misconduct to Title IX. I will provide our Title IX coordinator with relevant details such as the names of those involved in the incident, and Title IX will reach out to you to explore options for support, safety measures and reporting. For inquiries or concerns about gender-based harassment, discrimination or sexual misconduct or the complaint process at Gonzaga, contact the Title IX Coordinator:

Stephanie N. Whaley

Title IX Directory 509-313-6910

[whaleys@gonzaga.edu](mailto:whaleys@gonzaga.edu)

Business Services

Building 018

Or by filling out an online form:

[https://cm.maxient.com/reportingform.php?GonzagaUniv&layout\\_id=3](https://cm.maxient.com/reportingform.php?GonzagaUniv&layout_id=3)

For more information about policies and resources or reporting options, please visit the following websites: <http://www.gonzaga.edu/eo> and [www.gonzaga.edu/titleix](http://www.gonzaga.edu/titleix)

## **University Notice to Students with Disabilities/Medical Conditions**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability/medical condition requiring an accommodation, please call or visit the [Disability Access Office](#) (Foley Library room 122).

## **Course Evaluation**

At Gonzaga, we take teaching seriously, and we ask our students to evaluate their courses and instructors so that we can provide the best possible learning experience. In that spirit, we ask students to give us feedback on their classroom experience near the end of the semester. I will ask you to take a few minutes then to carry out course/instructor evaluation on-line. Please know that I appreciate your participation in this process. This is a vital part of our efforts at Gonzaga to improve continually our teaching, our academic programs, and our entire educational effort.

## **Resources and Success for Well-being**

Please take care of yourself and your fellow zags! Be aware of the student support resources that the University provides for you. Additional resources for student support are available at <https://www.gonzaga.edu/academics/Diversity/CampusClimate/campus-and-local-resources.asp>

## **Center for Cura Personalis**

The [Center for Cura Personalis](#) serves students in many ways including through proactive outreach and educational programs about healthy choices and interventions for students who may be struggling.

**Health and Counseling Services**

Health & Counseling Services functions as your private physician's office and counseling center. Health & Counseling Services is a confidential resource. To schedule an appointment, please call 509-313-4052.

**University Ministry**

University Ministry's mission is to support members of the Gonzaga community in their spiritual growth and development, empowering them to live out God's love in the world. Contact: University Ministry, Hemmingson Center 104, x4242 or [umin@gonzaga.edu](mailto:umin@gonzaga.edu)

**Campus Security and Public Safety**

At Gonzaga we believe that the security of our campus is a responsibility shared by all members of the community. For more information, visit the [Campus Security and Public Safety](#) site.