Course Syllabus (Fall 2019)

[CS 120] High-level Programming I: The C Programming Language

1. Course Information

1.1. General Information

Course full title: [CS 120] High-level Programming I: The C Programming Language

Pre-requisite(s): Nil

Co-requisite(s): Nil

Result type: Grade, 4 credits

Web page: Singapore Campus\Fall 2019\cs120f19-a.sg
https://distance.sg.digipen.edu/
The website is accessible via student's DIT login credential.

1.2. Description

This course serves as a foundation for all high-level programming courses and projects by introducing control flow through statement grouping, decision making, case selection, and procedure iteration as well as basic data types. Additionally, this course addresses the lexical convention, syntax notation, and semantics of the C programming language.

1.3. Objectives and Learning Outcomes

After successfully completing this course, the student should be able to read, write, and understand C programming language programs. The successful student will be prepared for the next programming course in the sequence, (CS 170: *High-level Programming II: The C++ Programming Language*), and will be able to use the C language in the subsequent project.

In particular, after successfully completing this course students should:

- ✓ Be able to communicate with a computer using a high-level programming language.
- ✓ Understand how programs written in high-level programming languages are translated into instructions that can be computed by the computer.
- ✓ Know how to compile, link, and execute a computer program.
- ✓ Be able to use simple data structures and understand how they are represented in high-level languages.
- ✓ Be able to apply the course concepts to implement various computer algorithms to solve classic problems.

2. Course Organization

In Fall 2019, there are 3 sections of students taking this course. This syllabus focuses on the section A only. Students from sections B and C with Liu Fang, *Ph.D.*, should refer to the respective syllabuses.

2.1. Lecture Schedule

Section A:	Tuesdays	9:00am – 10:40am
	Thursdays	9:00am – 10:40am
	SIT@SP	LT4A

2.2. Laboratory Schedule

Section A:	Fridays	9:00am – 11:10am
	SIT@SP	SR3E (Pascal)

2.3. Instructor

Lecturer: Slawomir "Swavek" Wlodkowski, *M.Sc.*

Consultation hours: (by appointment only, typically within the hours shown below)

Mondays	3:00pm – 5:00pm
Wednesdays	3:00pm – 5:00pm

Contact: swavek.wlodkowski@digipen.edu
(include "*[cs120f19-a]*" in the subject)

3. Learning Resources

3.1. Required Textbook

- Kim N. King, "*C programming: A Modern Approach*", 2nd Edition, W. W. Norton & Company, ISBN: 978-0393979503.

3.2. Recommended Reading

- Brian W. Kernigan and Dennis M. Ritchie, "*The C Programming Language*", 2nd Edition, Prentice Hall, ISBN: 978-0131103627.
- Phillip J. Plauger, "*The Standard C Library*", Prentice Hall, ISBN: 978-0131315099.

4. Course Outline

4.1. Schedule

Week	Week start/Date	Topic	Textbook chapter
1	***2nd September 2019***	***Fall trimester classes begin***	
	2nd September 2019	Course overview Introduction to computer programming Introduction to the C programming language	 1 2
2	9th September 2019	Syntax and grammar Data types Basic input/output (I/O)	3
3	16th September 2019	*Deadline for course withdrawal without academic penalty*	
	16th September 2019	Expressions and operators	4
4	23rd September 2019	Flow control Conditional statements, iteration (loops, repetition)	5 6
5	30th September 2019	Functions Run-time environment Scope, visibility and life-time	9.1 - 9.5 10
6	7th October 2019	Arrays	8.1 – 8.2
7	***14th October 2019***	***Trimester break (no classes)***	
8	***22nd October 2019***	***Mid-term exam***	
	21st October 2019	More data types and operators	7
9	30th October 2019	*Deadline for course withdrawal with grade "W"*	
	28st October 2019	Pointers	11
10	4th November 2019	Pointers and arrays	12
11	11th November 2019	Character strings	13
12	18th November 2019	File I/O Structures, unions and enumerations	22 16
13	25th November 2019	Dynamic memory allocation	17.1 - 17.4
14	2nd December 2019	***Trimester review (no classes)***	
15	***(TBA)***	***Final exam***	
16	*16th December 2019*	*Final grades due*	

Above is a list of topics that will be covered this trimester. Depending on time, some minor topics may be added or skipped. Please note that this is a tentative organization of the course and it may change.

5. Grading Policy

5.1. Grade Components

The composition of grades is as follows:

- Reading quizzes: 10%
- Written quizzes: 15%
- Assignments and laboratory exercises: 25%
- Mid-term exam: 25%
- Final exam: 25%

Important note: you must receive an average score of 60% on both the mid-term and final exams to pass this course, regardless of your quiz/assignment scores.

5.2. Letter Grades

The following table presents the final letter grades in relation to the grade percentage.

Grade	Description	Percentage
A	Excellent	93 – 100%
A –	Excellent	90 – 92.99%
B +	Good	87 – 89.99%
B	Good	83 – 86.99%
B –	Good	80 – 82.99%
C +	Fair	77 – 79.99%
C	Fair	73 – 76.99%
C –	Fair	70 – 72.99%
D	Poor	60 – 69.99%
F	Failure	Below 60%

Fair (C-) is the minimum grade required for undergraduate students to earn credit in core courses.

Poor (D) is the minimum grade required for undergraduate students to earn credit in non-core courses.

5.3. Class Participation

Class participation can boost your grade if you are on the border – for example, it is possible to get an A- with an overall grade of 89.8% if you have actively participated in classes throughout the trimester.

5.4. Rubrics and Assessment

During the trimester there will be two major exams – mid-term and final, several short quizzes and in-class programming assignments during the laboratory classes.

In addition, there will be about 6 programming assignments to work on outside of class. These are not large and you will usually have one to two weeks to complete them, although they generally take no more than a few hours to complete.

Programming assignments will use the C programming language. More specifically, all programs must adhere to the standard C89 (also known as C90), which is what this course is about. Although newer

versions of the C programming language standard exist, this is a course on the fundamentals of programming, and thus it focuses as much on the C programming language as on the process of representing simple business problems in a form of computer software.

Every assignment will consist of a program specification, which describes the functionality that needs to be implemented, and it may include a list of functions that you must implement to complete the assignment. You must strive to follow all of the directions exactly as defined in the specification.

Your assignment submissions will be evaluated and graded using GNU gcc compiler (version 7.4.0, or higher). These compilers are installed on DigiPen Singapore computers. The detailed submission guidelines will be published alongside the first assignment specification.

5.5. Late Submission

Each assignment provided will be accompanied with a due date and time, which will be clearly stated on the assignment submission page. A **100% penalty** will be imposed on any submission deemed late by the DigiPen Distance Learning course management system (*Moodle*). Submissions after the due date, or submissions using other means of communications (i.e. via email) will not be permitted.

Students may request for extensions should they provide valid reasons with documented proof to justify their case. This will be handled on a case-by-case basis by the instructor. Request for extensions after the deadline will not be accepted except in extraordinary cases.

5.6. Grade Appeal

If a student is dissatisfied with the grades, they should firstly raise up the matter to the instructor. If the student is still not satisfied, they can do a formal grade appeal through the Registrar's Office. A formal committee will be assembled to resolve the appeal. In such cases, students must fill-in the Grade Appeal Form available at Front Desk and submit it to the Registrar's Office, along with supporting documents.

5.7. Re-Sit Examination

Students who fail to acquire a minimal grade required to pass the course may be eligible to re-sit the final exam. The re-sit will be offered to the students with the final grade from the course within 5% of the course's minimal required grade.

The instructor will provide a list of eligible students to the Registrar's Office within two days after the grade report deadline. The Registrar's Office will notify the students, who should reply within three days after the email notification. The Registrar's Office will conduct the re-sit examination on the Friday prior to the start of the trimester. Until receiving the results, the students will be excused from the prerequisite requirements in the new trimester. The re-sit exam will be graded by Friday of the first week of the new trimester. The re-sit exam grade will replace the original grade from the final exam. If the new total score lets the students acquire the minimal passing grade, the minimal grade will be recognised as the official grade from the course.

6. Attendance Policy

6.1. Mandatory Attendance

Attendance in the lectures is mandatory. There are no makeup quizzes or exams. You will be penalized for unexcused absences from class according to the following scale:

- Four (4) or more absences will result in a 10% reduction of your overall course grade.
- Eight (8) or more absences will result in a 20% reduction of your overall course grade.
- Eleven (11) or more absences will result in a 30% reduction of your overall course grade.
- Fifteen (15) or more absences will result in your automatic failure in the course irrespective of your performance on assignments, quizzes, and exams.

6.2. Medical Leave and Family Emergencies

Medical leave and family emergencies accompanied by appropriate documents will be the only exceptions to the mandatory attendance policy. Sleeping, studying for another class or exam, working on your game, etc., are not valid reasons for an absence.

6.3. Classroom Conduct

Students are expected to behave professionally at all times with regards to classroom conduct. To maintain a conducive learning environment during class, it is expected for students to:

- Be quiet during class while the instructor is talking and to keep a low noise level at all times. This is to ensure that everyone is able to listen to the lecture and discussion. Do not disturb others while doing class activities.
- Turn off your mobile phones and devices or put them on silent mode. This is to prevent unwanted interruptions due to phones ringing or vibrating. In emergency situations, get the instructor's approval to use the phone before the class.
- Reduce use of mobile phones during class where possible. Also, playing games on any device is strictly prohibited during class time. This is to reduce distractions for everyone around including the student him/herself. Penalties may be imposed if students are caught doing so.
- Keep the classrooms clean. Eating or drinking in class is strictly prohibited with the exception of bottled water. Do dispose of all wastes (such as used paper, eraser crumbs, empty bottles etc.) in the garbage bins located outside classrooms.
- Do not mistreat school equipment (such as computers, keyboards, mice, monitors etc.). There will be penalties given for such abuse cases and having broken equipment will cause inconvenience for everyone in school.

6.4. External Preparation

It is expected that the students in this class spend 6 hours on average per week for outside classroom activities through the trimester, including, but not limited to, homework, reading assignments, project implementation, group discussions, preparation of examinations, etc.

6.5. Last Withdrawal Date

In this semester, the last date to withdraw without an academic penalty is 16th September 2019. The latest course withdrawal date is 30th October 2019.

In order to withdraw from a course it is not sufficient simply to stop attending class or to inform the instructor. In accordance with the policy, contact your advisor or the Registrar to begin the withdrawal process. The last day for withdrawal from this course is cited in the official catalog.

7. Other Policies

7.1. Academic Integrity

DigiPen Institute of Technology Singapore stands for academic honesty, and professional integrity. As this course requires students to submit work for assessment, through this policy DigiPen would like to highlight the importance of the proper moral conduct and ethics.

Academic dishonesty in any form will not be tolerated in this course. Cheating, copying, plagiarizing, or any other form of academic dishonesty (including doing someone else's individual assignments) will result in, at the extreme minimum, a zero on the assignment in question, and could result in a failing grade in the course or even expulsion from DigiPen.

It is permissible to discuss exercises and assignments (not solutions) with other students in the class, but the solutions must be recognizably your own. With the internet as a readily accessible source of information and help, students may feel that plagiarism is ambiguous, and thus be unable to determine what it constitutes. Here are some general guidelines to help make the distinction:

- Do **NOT** copy-paste any works online. Using works that are not yours is plagiarism.
- Do **NOT** ask online communities (such as stack overflow, unity forums etc.) to solve your bugs and code issues by providing your code segments. Asking others to solve your issues is work not done by you, and thus it is plagiarism.
- You may learn from sources online, understand the workings and concepts, and implementing them again via **your own efforts**. A good habit is to assume that you will be tested on the things you learn online, and if you are unable to answer the questions then you should not use said works.
- You may ask online communities about general problems, and use their insights **to work on your problem**.
- These applies to all sources on any medium, be it the internet, textbooks, friends or social media. It is the content that is important, not the medium they are on.
- The bottom line test is to ask yourself "**Did I work on this?**" If you did not, then you should not use it. Learn from it and work it out yourself.

7.2. Disability Support Services

Students who have special needs or medical conditions and require formal accommodations in order to fully participate or effectively demonstrate learning in this class should contact the Student Life & Advising Office (studentlife.sg@digipen.edu) at the beginning of each semester. A Student Life & Advising Officer will meet with the student privately to discuss how the accommodations will be implemented.