

# CS 111

## Introduction to Computing Science

### COURSE OUTLINE

1. **SEMESTER/YEAR:** *Semester 1, 2020*
2. **MODE OF DELIVERY/LOCATION:** *Face to Face and Online at All Campuses*
3. **PRE-REQUISITES:** *At least 50% in Form 7 Mathematics or equivalent*
4. **COURSE CO-ORDINATOR:** *Mr. Ratneel Deo*
5. **TEACHING TEAM**

**Coordinator: Mr. Ratneel Deo**

**Office:** Room B319, 3<sup>rd</sup> Floor, Japan ICT Building B

**Phone:** 3231658

**Email:** ratneel.deo@usp.ac.fj

**Consultation Hours:** *Open Door Policy*

**Lecturer: Professor Michael Wagner**

**Office:** Room A216, 3<sup>rd</sup> Floor, Japan ICT Building A

**Phone:** 3231574

**Email:** michael.wagner@usp.ac.fj

**Consultation Hours:** *Open Door Policy*

### 6. LECTURE TIMES & VENUE

Start	8.00am	9.00am	10.00am	11.00am	1.00pm	3.00pm	4.00pm
End	9.00am	10.00am	11.00am	12.00pm	2.00pm	4.00pm	5.00pm
Monday							
Tuesday	092-001						
Wednesday							092-001
Thursday							
Friday		092-001					

## 7. EMERGENCY CONTACT

Name: A/Prof. MGM Khan

Phone: 3232507

Email: mgm.khan@usp.ac.fj

Office: Level 3, Building A, Japan ICT Center.

## 8. COURSE DESCRIPTION

An introduction to computing programming language hierarchy (machine assembly, high-level) and basic computer organisation (I/O, main storage, secondary storage and CPU), problem solving and algorithms using a modern high level language. A contemporary programming language will be used as a tool for problem solving. No assumptions are made about the computing knowledge required prior to the course. However essential knowledge about the Personal Computer, the Windows operating system and the programming environment will be provided in the first few weeks of the course.

## 9. COURSE LEARNING OUTCOMES

On successful completion of this course, students should be able to:

1. Define the basic functional components of a computer system, operation and inter-connection
2. Apply programming concepts to computing problems
3. Examine Code for its syntax and semantic validity
4. Identify the functionality of existing codes

## 10. USP GRADUATE OUTCOMES

The USP graduate outcomes are as follows:

1. **Communication:** Graduates will be able to communicate ideas clearly and persuasively in structured formats using language and other modes of communication that are appropriate for context, audience and specific disciplinary conventions.
2. **Creativity:** Graduates will extend boundaries of current knowledge in a particular discipline or profession.
3. **Critical thinking and quantitative reasoning:** Graduates will be able to evaluate multiple perspectives and arrive at a reasonable independent judgement based on evidence.
4. **Ethics:** Graduates will demonstrate a commitment to high ethical standards in scholarly, professional and socio-cultural practices.
5. **Pacific consciousness:** Graduates will recognize the cultural heritage and diversity of Pacific societies for sustainable development in a contemporary environment.

6. **Professionalism:** Graduates will demonstrate the ability to carry out tasks to acceptable standards within their profession and occupations.
7. **Teamwork:** Graduates will work together in a respectful and collaborative manner to complete tasks within teams to achieve an outcome.

## 11. COURSE CONTENT

Course Content			
Week	Topic	Textbook Readings	Lab
1	Introduction and Previewing C++ Getting Started, The program editor (IDE) Moodle	Chapter 1.1 - 1.4	
2	First C++ Program: Hello World C++ input/ output statements Thinking about programs	Chapter 1.5 - 1.7	Lab 1
3	Introduction to Variables Variable types Math in C++, Constants	Chapter 2	Lab 2
4	Introduction to C++ if statements Multiple ifs Nested If ... else if & switch statements	Chapter 3.1 - 3.4	Lab 3
5	Compound Boolean Expressions Loops – While loops	Chapter 3.6 -3.8 Chapter 4.1	Lab 4
6	For and Do loops Common algorithms	Chapter 4.2, 4.3,4.4, 4.5, 4.7	Lab 5
7	Nested Loops Random Numbers	Chapter 4.8, 4.9	Lab 6
MID Semester Break			
8	Functions	Chapter 5.1 - 5.5	Lab 7
9	Advanced Functions Variable Scope	Chapter 5.6 – 5.9	Lab 8
10	Arrays	Chapter 6.1 – 6.3	Lab 9
11	Arrays II	Chapter 6.4 – 6.7	Lab 10
12	Pointers	Chapter 7.2 – 7.4	Lab 11
13	Pointers and Structs	Chapter 7.5 - 7.7	Lab 12
14	C++ file input / output	Chapter 8	
Study Week and Examinations			

## 12. PRESCRIBED TEXT AND OTHER RESOURCES

Horstmann, Cay. *C++ For Everyone*, Second Edition, Wiley Higher Education, 2010, ISBN 978-0-470-92713-7

## 13. ALIGNMENT OF LEARNING OUTCOMES, ACTIVITIES AND ASSESSMENT

The following table demonstrates the alignment of the course learning outcomes to appropriate activities and assessments and the links to programme and USP graduate outcomes.

Course Learning Outcome	Associated Teaching and Learning Activities	Assessment	Programme Outcomes	USP Graduate Outcomes
1	Lectures and Labs	Assignment 1, Lab Test, Mid Semester Test	Hardware & Software Fundamental  Societal Issues/Legal issues/Privacy	Pacific Consciousness
2	Lectures and Labs	Assignment 2, Lab Test	Programming  Human Factors  Abstraction  Ethics  Teamwork concepts/issue	Critical Thinking,  Ethics and Teamwork
3	Lectures and Labs	Assignment 2, Weekly Quizzes, Final Exam	Programming	
4	Lectures and Labs	Weekly Quizzes, Mid Semester Test  Final Exam	Programming	

## 14. ASSESSMENT

### 14.1 ASSESSMENT PORTFOLIO

TYPE OF ASSESSMENT	WEIGHT	Comments/Rationale	LEARNING OUTCOME
<b>CONTINUOUS ASSESSMENT – 60%</b>			
<b>Short Tests</b>	20	<p>A written test will be performed under strict supervision with an allocated time of 50 minutes in each half of the semester.</p> <p>This will test students' ability to recall, identify, and explain concepts taught during the semester. Students' may also be required to examine existing code and determine its function and/or result.</p>	1, 4
<b>Weekly Exercises</b>	10	<p>These refer to weekly Quizzes spread over whole semester.</p> <p>In these, students will answer short question relating to concepts taught during the week and they have to write C++ code with the assistance of their tutors.</p>	3, 4
<b>Assignment</b>	20	<p>Two assignments are required to be done, one in each half of the semester.</p> <p>Each Assignment will test the students ability to apply the concepts taught during the semester and to analyze and solve a small open-ended problem</p>	1, 2, 3
<b>Lab Tests</b>	10	<p>Two discrete lab tests will be conducted one in each half of the semester.</p> <p>Each Lab test will test the students ability to recall the concepts taught in the labs and vet their practical programming skills</p>	1, 2
<b>FINAL EXAMINATION – 40%</b>			

### 14.2 PASSING THE UNIT

In order to be awarded a pass in this unit, students must:

- Achieve an overall mark of at least 50% in the course.
- *Attend at least 60% of TUTORIALS/LABS (This only applies to Face to Face Students)*
- *Achieve at least 40% (16/40) in the final exam.*
- *If you DO NOT comply with these criteria you are automatically deemed to have failed, the course although you will be allowed to attempt all assessments.*

### 14.3 GRADE DISTRIBUTION

A+	A	B+	B	C+	C	D	E
85-100	78-84	71-77	64-70	57-63	50-56	40-49	0-39

### 14.4 ASSESSMENT POLICIES AND REGULATIONS

For detailed regulations, please refer to the USP Handbook and Calendar.

**Plagiarism**, copying materials from other sources without proper referencing and acknowledge of the source is a serious offence and will be dealt with severely. In the **Regulations Governing Academic Misconduct** section of the USP Handbook & Calendar plagiarism is defined as “the copying of another person’s creative work and using it as one’s own – without explicitly giving credit to the original creator. Work copied without acknowledgement from a book, from another student’s work, from the internet or from any other source”. If lecturer is satisfied that plagiarism has occurred, they will report the matter to the Head of School. They can reduce marks appropriately. If the matter is seen as serious enough it can be taken to the Student Disciplinary Committee by the Head of School.

### 15. IMPORTANT DATES

Activity	Week	Weighting (%)
<i>Assignment 1</i>	<i>5</i>	<i>10</i>
<i>Short Test 1</i>	<i>7</i>	<i>10</i>
<i>Lab Test 1</i>	<i>7</i>	<i>5</i>
<i>Assignment 2</i>	<i>12</i>	<i>10</i>
<i>Short Test 2</i>	<i>13</i>	<i>10</i>
<i>Lab Test 2</i>	<i>13</i>	<i>5</i>
<i>Weekly Quizzes</i>	<i>1-14</i>	<i>10</i>

### 16. ADDITIONAL COURSE ATTENDANCE

#### 16.1 LABS / TUTORIALS

The course has weekly two-hour lab/tutorial sessions starting from Week 2. Attendance in lab/tutorials is mandatory for all face to face students. Students can choose their tutorial sessions by signing up on the course shell on Moodle. All tutorials start from the second week. Online students are **‘NOT REQUIRED’** to attend labs, however, they are encouraged to attend for personal benefit.

**“Lab times will posted on Moodle in Week 1”**

## 17. STUDENT SUPPORT

### 17.1 ONLINE HELP & e-Learning INFORMATION

#### 17.1.1 e-Learning

All course materials that will be made available on Moodle, students are encouraged to print out notes well before time and read through it at least once so that it makes sense once lectures are delivered.

All information and material will be provided on Moodle share for this Course in the website: <http://elearn.usp.ac.fj>. You may login using your SOLS username and password.

Students may either call in personally or seek help via email. Any student seeking help relating to the course via email should include the following:

#### EMAIL HELP

**From:** <a valid student ID to be used> (Reason: When we send it to outside mail, spammers can get hold of our address to send us junk mail and it is very time involving to scan through all emails)

**Message Body:** write concisely what you need to be clarified. Also include your name at the end. It is an uncourteous gesture not to include the sender's name.

### 17.2 FACULTY STUDENT LEARNING SUPPORT (SLS) SERVICES

FSTE Student Learning Specialists provide you with professional assistance for successful study and help you develop as an independent active learner. Student Learning Support services are provided at the Hub. The student support staff will:

- respond to your email requests through [fstetutorsupport@usp.ac.fj](mailto:fstetutorsupport@usp.ac.fj).
- help you to adapt to the new environment and expectations of students at the USP.
- have one-to-one consultations with you to discuss any challenges that you may be facing in your studies.
- connect you to mentors (study buddies) who will guide you and facilitate group discussions with other students in your courses.
- conduct special workshops to upskill and equip you for your assessments and examinations. ( e.g. Literature Review, Report Writing, Presentation Skills, etc.) NB Check your student webmail for advertisements.
- help you unpack and understand your assignments and tutorial questions.
- assist you with English language and mathematics basic skills.
- provide specific assistance for students with disability.
- assist students who have left school for some years (mature students).
- assist students who are not performing up to par.

#### 17.2.1 AT-RISK STUDENTS

Extra Help (Remedial) Sessions are compulsory for students who have demonstrated prior weak performance. Extra Help Sessions must be taken in addition to regular tutorials, and a minimum attendance of 60% in these sessions is required to pass the course. Students who

qualify for Extra Help Sessions will be notified by the Course Coordinator prior to the 3rd week of the semester. The purpose of these sessions is to provide students who have struggled in the past ("C" grade or less in prerequisite courses) by providing additional contact with teaching staff to help them succeed in the course. The type of extra help offered in these sessions is determined by the Course Coordinator. Qualifying students will be identified by the Faculty. Based on student marks at mid-semester, the Course Coordinator may require struggling students to attend Extra Help Sessions during the second half of the semester. These sessions can include extra tutorials, workshops, peer mentoring, etc.

### **ALL FSTE SLS SERVICES ARE FREE OF CHARGE**

More details about the FSTE Student Learning Support can be found at: Website:  
<http://www.usp.ac.fj/index.php?id=10950>

## **EXPECTATIONS OF STUDENTS**

### **18.1 STUDENT RESPONSIBILITIES**

Students are expected to:

- Print and READ the course notes from Moodle shell well before the lecture is scheduled to be delivered.
- Attend all lecturers, tutorials and laboratory unless hampered by illness.
- Carry out assignments individually unless otherwise stipulated within or by the lecturer in the class.
- Carry out any research required for laboratory and come prepared in the lab on time with relevant literature to carry out experiments.
- Maintain proper attire for the laboratory, clothing, shoes etc.
- Facilitate the course coordinator with any proof that he/she was sick and unable to attend classes or assessment at the earliest possible time to avoid getting a zero mark for the missed assessment.
- Report any damages to the equipment immediately to the technician and laboratory demonstrator.
- Be responsible for any damages of USP property due to negligence. (Negligence will be assessed by the Chief Technician(s) and the Division Coordinator(s).
- Follow all guidelines stipulated in the School's OHS regulations. (Guidelines will be provided during the first lab session. ☐)

### **18.2 STUDENT WORKLOAD**

Type	Hours per Semester
Lectures(F2F)/ Self-study (O)	54
Labs (F2F)/Practical (O)	42
Tests and Quizzes	20
Weekly Exercises	28
Assignments	32
Exam	40
<b>Total</b>	<b>216</b>