COMP520

Object-Oriented Programming Fundamentals

Instructor contact details
Lecturer-in-charge: TBA
Email: TBA or send general enquiries to wlwyxy_29@zju.edu.cn
Office location: to be announced
Consultation Times: to be announced, and by appointment

Teaching Times and Locations
The Time and Location: TBA
Lecture sessions include lectures, as well as in-class discussions and test(s).

Academic Level
Undergraduate

Units of Credit

The course is worth 6 units of credit at Zhejiang University, with total of 40 teaching hours.

Overview
This subject provides basic skills in Java programming and software design, with no assumed knowledge of programming. It covers the topics of object-oriented (OO) programming concepts, data flow, control flow, arrays, and the basics of sorting and searching algorithms. The subject teaches and illustrates a design process using a set of design notations and design rules, and shows how to develop a correct, readable and reusable solution from a problem specification.

Prerequisites
None

Subject learning objectives
Upon successful completion of this subject students should be able to:

1. Demonstrate a working knowledge of the basic constructs in the object-oriented language Java by being able to complete small programs.

2. Use the BlueJ programming environment to build simple software systems.

3. Design and code a software system that correctly implements a solution to a small problem defined by a specification, and follows specific design rules.

4. Comprehend and use basic program control constructs of sequence, selection and iteration.

5. Comprehend and use code that implements arrays and the basic sorting and searching algorithms.

Learning Resource

Lecture handouts will be given in class.

The course website provides links to a number of online resources to assist students in learning programming in C and C++. For those students who would also like to have a text book, we would recommend the following:
"Problem Solving with C++", 9e Global Edition, Walter Savitch, ISBN-13:9781292018249, Addison-Wesley, 2015.

Teaching Strategies

This subject is taught using a combination of lectures, tutorials, labs and assessments. The subject is taught progressively. The assessments are available progressively so that students can learn at their own pace.

The subject content is presented in four face-to-face hours each week: two hours of "live" lecture, and two hours of combined tutorial and laboratory class (i.e. the class listed as "cmp" in the student's timetable).

Learning & Teaching Modes

This course has four contact activities: lectures, practicals, workshops and small group discovery. Each of these activities is used to support and build on each other, they do not repeat material.

Lectures will be used primarily to introduce the core theoretical material of the course.

The practicals are focussed on developing core programming skills in C++ both individually and collaboratively. They will include a small number of individual practical exams. You should also spend a significant amount of time on programming outside of these sessions.
The workshops are hands on collaborative sessions with groups of students sharing computers working on activities that may reinforce lecture material or introduce key skills required by the practicals.

The small group discovery sessions focus on a guided research experience in an area of ethics relevant to Software Engineering. The small groups will do most of their work outside these sessions.

Course Delivery

The course will be taught in English through lectures, seminars, field trips, group activities and presentations. In addition to these, there will also be guest speakers and optional field trips available for students who would like to enhance their learning experience. The course sessions will be running during the weekdays, Monday to Friday. The course will be at a total of 40 hours.

Schedule

Week	Description	

Day 1	Study Overview., Study Preparation: Both live lectures and lab sessions commence in week 1. This lecture includes an introduction to lab work via the "Hello" program. Basics of Computer Architecture	23 / 12 / 2019
Day 2	Arrays and Points	24 / 12 / 2019
Day 3	Programming Languages, Grammars, Compiling	25 / 12 / 2019
Day 4	Object, Oriented, Design	26 / 12 / 2019
Day 5	Classes, Objects, Inheritance	27 / 12 / 2019
Day 6	Abstract Classes, Polymorphism	28 / 12 / 2019
Day 7	Planning, Design	29 / 12 / 2019
Day 8	Debugging	02 / 01 / 2020
Day 9	Event Driven Computing, Graphics	03 / 01 / 2020
Day 10	Sorting, Searching	06 / 01 / 2020
Day 11	Theory of Computation	07 / 01 / 2020
Day 12	Algorithmic and Problem-Solving Strategies	08 / 01 / 2020
Day 13	Ethics in Software Engineering	09 / 01 / 2020
Day 14	Assessment Due: Final exam	10 / 01 / 2020

Assessments

Details on each of the assessments will be discussed during class lectures.

4 practicals	20%	Due date: 03 / 01 / 2020
Workshops	25%	In class: 06 / 01 / 2020
Mid-term examination	25%	In class: 29 / 12 / 2019
Final exam	30%	In class: 10 / 01 / 2020

Grade Descriptors

HD	High Distinction	85 - 100
D	Distinction	75 - 84
CR	Credit	65 - 74
P	Pass	50 - 64
F	Fail	0 - 49

High Distinction 85-100

Treatment of material evidences an advanced synthesis of ideas
Demonstration of initiative, complex understanding and analysis
Work is well-written and stylistically sophisticated, including appropriate referencing, clarity, and some creativity where appropriate
All criteria addressed to a high level

Distinction 75-84

Treatment of material evidences an advanced understanding of ideas Demonstration of initiative, complex understanding and analysis Work is well-written and stylistically strong
All criteria addressed strongly

Credit 65-74

Treatment of material displays a good understanding of ideas
Work is well-written and stylistically sound, with a minimum of syntactical errors All criteria addressed clearly

Pass 50-64

Treatment of material indicates a satisfactory understanding of ideas Work is adequately written, with some syntactical errors
Most criteria addressed adequately

Fail 0-49

Treatment of ideas indicates an inadequate understanding of ideas Written style inappropriate to task; major problems with expression Most criteria not clearly or adequately addressed

Academic Integrity

Students are expected to uphold the university's academic honesty principles which are an integral part of the university's core values and principles. If a student fails to observe the acceptable standards of academic honesty, they could attract penalties and even disqualification from the course in more serious circumstances. Students are responsible for knowing and observing accepted principles of research, writing and any other task which they are required to complete.

Academic dishonesty or cheating includes acts of plagiarism, misrepresentation, fabrication, failure to reference materials used properly and forgery. These may include, but are not limited to: claiming the work of others as your own, deliberately applying false and inaccurate information, copying the work of others in part or whole, allowing others in the course to copy your work in part or whole, failing to appropriately acknowledge the work of other scholars/authors through acceptable referencing standards, purchasing papers or writing papers for other students and submitting the same paper twice for the same subject.

This Academic Integrity policy applies to all students of the Zhejiang University in all programmes of study, including non-graduating students. It is to reinforce the University's commitment to maintain integrity and honesty in all academic activities of the University community.

Policy

- The foundation of good academic work is honesty. Maintaining academic integrity upholds the standards of the University.
- The responsibility for maintaining integrity in all the activities of the academic community lies with the students as well as the faculty and the University. Everyone in this community must work together to ensure that the values of truth, trust and justice are upheld.
- Academic dishonesty affects the University's reputation and devalues the degrees offered.
- The University will impose serious penalties on students who are found to have violated this Policy. The following penalties may be imposed:

    o Expulsion;
    o Suspension;
    o Zero mark/fail grade;
    o Marking down;
    o Re-doing/re-submitting of assignments or reports; and o Verbal or written warning.