



BUSINESS SCHOOL
Te Kura Pakihi

INFO 202
Developing Information Systems 2
Second Semester, 2022

COURSE OUTLINE

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1 TL;DR

(aka all the most critical information)



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What	When	Where
Lab	Monday 10am–noon	OBS 327
Lab	Monday 4pm–6pm	OBS 327
Lab	Tuesday 9am–11am	OBS 327
Lab	Tuesday noon–2pm	OBS 327
Lecture	Wednesday 10am–11am	St. David B
Lecture	Thursday 2pm–3pm	Archway 1
Blackboard Test 1 (5%)	Friday 19 August at 11:59pm	
Blackboard Test 2 (5%)	Friday 7 October at 11:59pm	
Project Milestone 1 (20%)	Friday 26 August at 5pm	(complete project
Project Milestone 2 (20%)	Friday 30 September at 5pm	counts for 40%)
Final Exam (50%)	TBA	TBA

Labs start in the *first* week.

TO PASS INFO 202 YOU MUST
achieve a total overall mark of at least 50%, AND
achieve at least a 40% average across the two tests and the final exam, AND
participate in at least *eight* of labs 2 through 12 (Terms).

Continue reading for the full, gory details! 😊

2 Paper description and aims

Software manages much of the modern world, from business and science to mobile apps and cars. INFO 202 covers key principles and practices of software development. You will learn how to create software and manage the development process, focusing on how to use object-oriented programming techniques to produce effective information systems, and how to use testing to ensure software quality. INFO 202 includes a practical project to give you experience in developing a larger information system.

3 Learning outcomes

In addition to the skills learned in INFO 201, if you complete INFO 202 you should be able to:

1. design, build, and deploy basic information systems using modern programming languages, frameworks, and tools;
2. explain the importance and the different forms of software testing and be able to plan and carry out software testing using appropriate tools; and
3. explain the infrastructure that underpins deployed applications, including basic concepts of networking, virtualisation, and cloud computing.

INFO 202 will help you become proficient in the Java programming language and related technologies, in the context of developing a three-tier information system. You will also be expected to improve on important soft skills such as problem solving and critical thinking, personal skills such as self-awareness, and interpersonal skills.

4 Teaching staff



Paper coordinator & lecturer: Dr. Nigel Stanger

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✉ nigel.stanger@otago.ac.nz

Contact Dr. Stanger with any questions about INFO 202 content, administrative enquiries, or requests for late submission of internal assessment.



Lab tutor: Mr. Mark George

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✉ mark.george@otago.ac.nz

Contact Mr. George for help with INFO 202 labs or internal assessment.

You are welcome to contact teaching staff about anything relating to INFO 202. We generally have an “open door” policy: if the office door is open, we are probably available; if closed, probably not. Scheduled office hours will also be posted on [Blackboard](#) and our office doors. We will make our best effort to be available during these times, but this may not always be possible due to other commitments. You are welcome to email us to ask questions or to arrange a meeting.

5 Delivery

You should attend all your timetabled lectures and labs, and prepare for each lecture by reading any assigned material. Your INFO 202 timetable will appear in your eVision portal (unless you added the paper after Friday 8 July), and timetable details will also be posted on [Blackboard](#). All teaching material will be made available through [Blackboard >> INFO202 >> Documents](#) where possible. Please check Blackboard regularly for announcements, updates, and corrections.

The planned teaching schedule is at the end of this document. The schedule is not fixed and may be subject to change during the semester (also see [Section 5.2](#)). The latest version can always be found on [Blackboard](#). Any major changes will be made in full consultation with the class.

Lectures present the key conceptual material. You will attend two lectures each week: Wednesday 10am–11am in St. David B, and Thursday 2pm–3pm in Archway 1. We will make our best effort to upload lecture slides to [Blackboard](#) before each lecture, but this may not always be possible. We will record and publish lectures through Otago Capture, normally within 24 hours.

IMPORTANT

Labs start in the *first* week.

You must participate in at least *eight* of labs 2 through 12 (see [Section 7.5](#)).

Labs are where you cement concepts learned in lectures by working on project tasks (see [Section 7.2](#)). You will attend one lab each week: Monday 10am–noon, Monday 4pm–6pm, Tuesday 9am–11am, or Tuesday noon–2pm, all in OBS 327. You are allowed to attend more than one stream, but if the lab is busy priority will be given to students timetabled into that stream. Material covered in labs may go beyond that covered in lectures and is examinable. The lab exercises will initially provide detailed instructions, but the level of detail will reduce over time in order to foster individual problem-solving and critical thinking. It is in your best interest to attend labs, as they provide you guaranteed access to help from teaching staff. Labs often start with a discussion of topics relevant to the lab/project, so make the effort to be on time.

5.1 Teaching resources

INFO 202 uses free, open source tools running on a Linux desktop installed in OBS 327 and North CAL (the tools are also on the student desktop, but may be configured differently). You should have 24-hour access to both rooms and can use them at any time they are not being used for teaching. You can also install the tools on your own Linux, macOS, or Windows computer.

There is no prescribed textbook for INFO 202, but there are many online Java resources and tutorials. To improve your Java programming skills we recommend the following books:

- *Java: The Complete Reference*, 12th edition, Herbert Schildt, McGraw-Hill (2021).
- *Simply Java programming — An Application-Driven Tutorial Approach*, Deitel, Deitel, Listfield, Yaeger, and Zhang, Pearson Education (2004).

5.2 COVID-19 contingency plans

COVID-19 could impact INFO 202 at any time. For example, the COVID-19 traffic light settings may change, or you or one of the teaching staff may need to self-isolate. As a precaution, ensure

that you have installed all relevant software on your personal computer so that you can continue to work online if necessary. We have put in place the following contingency plans:

- All lectures are recorded, so we can easily switch to online-only if needed. Face-to-face lectures may move to a different room in order to provide physical distancing.
- Lab exercises can be completed in your own time on your own computer, with scheduled help sessions via Zoom. Lab participation for Terms (see [Section 7.5](#)) will be recorded by pushing completed lab work to GitBucket.
- If you have problems with your lab or project work, push to GitBucket and email us (this is often how it works under normal circumstances anyway).
- Ad hoc Zoom sessions can be organised as necessary.

We will provide further details and instructions should these plans need to be activated.

6 Expectations and workload

The teaching team (see [Section 4](#)) are committed to creating the best possible environment to facilitate your learning, but learning is a joint activity that also requires *your* active participation.

What you can expect of us:

- We will keep you informed of important developments by means of announcements both in class and on [Blackboard](#). Critical notices will also be sent to your student email address.
- We will answer queries within a reasonable timeframe. Typically this will be the same day for urgent queries, and within 48 hours for non-urgent queries. **Closeness of an assessment deadline does not automatically make queries urgent.** Please include your name and student ID in all correspondence in order to facilitate any follow-up.
- We will maintain regular contact with class reps, and will consult the class before changing the content or structure of the assessment schedule.
- We will mark internal assessments within a reasonable timeframe, typically within two to three weeks of the submission deadline, depending on other commitments.
- We will make our best effort to be available in our offices during scheduled office hours, depending on other commitments. We will make alternative arrangements where necessary, and operate an “open door” policy at other times (see [Section 4](#)).

What we expect of you:

- You will read the Course Outline. 😊
- You will keep up to date with announcements and regularly check your student email.
- You are familiar with the relevant prerequisite material. While we can provide links to revision materials, it is your responsibility to make effective use of these.
- You will prepare for, attend (on time), and actively participate in as many of the lecture and lab classes as you can (also see [Section 7.5](#) regarding lab participation for Terms).

- You will seek out relevant supplementary material. Independent learning is normal in industry. Simply reading or watching videos about a topic is not enough to truly understand it, however; you will be most successful when you can *apply* your knowledge.
- You will manage your time effectively. This includes completing assessments on time, and working on lab and assessment tasks in your own time outside scheduled classes.
- You will submit all assessments on time (see also [Section 7.6](#)) and to the required standard (see [Section 7.3](#)). Assessment deadlines have already been set (see [Section 7](#)); work submitted late without prior arrangement will be penalised as described in [Section 7.2](#).

The expected workload for INFO 202 is about 180 hours per student for the whole semester, or about twelve hours per week on average. This will of course vary from week to week and from person to person; remember that 180 hours is a *guideline*, not a target. A rough model of how this could be broken down is as follows (see also [Section 5](#)):

Contact hours	Lectures	26×1	=	26 hours
	Labs	13×2	=	26 hours
Assessment	Project	$30 + 35$	\approx	60 hours
	Tests & exam	$1 + 1 + 3$	=	5 hours
Personal study	Lectures & labs	$26 + 13$	\approx	39 hours
	Tests & exam	$3 + 3 + 20$	\approx	26 hours

7 Assessment

All INFO 202 material (unless explicitly stated otherwise) is examinable in the project, tests, and final examination. All important assessment information such as deadlines, content, guidelines, and so on will be discussed in lectures and, where appropriate, detailed on [Blackboard](#). You are responsible for ensuring that you are aware of this information, for keeping track of your own progress, and for catching up on any missed classes (also see [Section 7.5](#)).

7.1 Blackboard tests

There will be two online Blackboard tests, due **Friday 19 August at 11:59pm** and **Friday 7 October at 11:59pm**, respectively. Each test counts for 5% of your final mark, and will comprise questions relating to theoretical and conceptual material covered in lectures and labs. Each test will become available on the Monday of the week it is due. You can complete the test at any time during that week, but must complete it in one sitting. You will have two attempts, and the highest score will be your final mark. Further details will be published closer to the time.

7.2 Semester project

There will be a semester-long practical project in which you will implement a web-based information system using Java and JavaScript. You will use various frameworks including Jdbi (persistent data storage), Jooby (back end web services), and Vue.js (front end web interfaces). See the project specification documents on [Blackboard](#) for further details.

The project counts for 40% of your final mark, and will be submitted in two milestones, due on **Friday 26 August at 5pm**, and **Friday 30 September at 5pm**, respectively. Late submissions will

be penalised 15% of the milestone total mark per day unless there are exceptional circumstances (see [Section 7.6](#)). **Being sick for the last few days before a milestone deadline is not necessarily considered an exceptional circumstance.** You will have at least three weeks to work on each milestone, so plan ahead and do not leave it to the last minute. Each milestone will be marked during lab classes in the week following submission.

7.3 Assessment submission requirements

INFO 202 has minimum expectations for the quality of submitted assessments. **Projects that fail to compile will not be marked** (this includes PlantUML diagram code). Each milestone may also specify a minimum required amount of functionality, which will be detailed in the milestone's specification document. **Submissions that do not reach the minimum requirements will not be marked.**

You are required to use Git and the [INFO 202 GitBucket repository](#) to save the state of your project at regular intervals (i.e., every time you make a significant change to your code). This will help you develop the habit of following this good software engineering practice, and will also give us confidence that your work is your own. Incremental progress for each milestone submission must be visible in your Git history. **We will not accept a project submission that has no record of incremental updates over a reasonable period of time.** If you have any problems with your Git repository at any time, you should inform us immediately. We follow a “no surprises” policy, meaning that we need to know about problems when they occur, not at submission time.

You are expected to follow professional industry standards for code formatting and style, indentation, naming conventions, and programming practices. Refer to the Java coding conventions: <http://www.oracle.com/technetwork/java/javase/documentation/codeconvtoc-136057.html>

7.4 Final examination

There will be a three hour final examination that counts for **50%** of your final grade. Details will be published later in the semester. All INFO 202 content is examinable unless otherwise stated.

7.5 Final grade and passing the paper

TO PASS INFO 202 YOU MUST
achieve a total overall mark of at least 50%, AND
achieve at least a 40% average across the two tests and the final exam, AND
participate in at least *eight* of labs 2 through 12 (Terms).

Your final grade for INFO 202 will be calculated as follows:

Assessment	Weight	Learning outcome(s)
Blackboard Test 1	5%	1, 2
Blackboard Test 2	5%	1, 2, 3
Project	40%	1, 2, 3
Final examination	50%	1, 2, 3
TOTAL	100%	

To pass INFO 202, you not only need to score at least 50% overall, but also **achieve at least a 40% average across the two tests and the final exam** (in other words, you need to score at least 24/60 marks across the combination of the two tests and the final exam). If you do not meet this requirement you will fail the paper, *even if your total overall mark is over 50%*.

INFO 202 also has a Terms requirement to **participate in at least eight of labs 2 through 12** (i.e., excluding the first and last weeks). You need to provide evidence of working on lab exercises in a timely manner, normally by attending labs in person. If you miss a lab, you have until the lab session in the following week to show us that you have worked on it. Pushing completed lab work to GitBucket (which you should be doing anyway) is the best way to do this. If you fail to meet the Terms requirement you will not be permitted to sit the final exam and will fail the paper. You will be given fair warning before this happens (also see [Section 7.6](#) below).

You can check your internal assessment marks on Blackboard. It is *essential* that you verify all your internal assessment marks and promptly notify the teaching staff of any errors or omissions.

7.6 Special consideration

If you feel unwell, please stay at home.

Send us an email as soon as you can so that we can organise alternative arrangements for lab participation and/or internal assessments.

If you have a disability, please let us know how we can help. We are happy to offer whatever assistance we can, but need to know in advance of any potential difficulties that might arise.

Sometimes events outside your control may cause you to miss a deadline or lab class. These may be known in advance (e.g., weddings, family reunions, jury duty, ...) or unexpected (e.g., illness, injury, family emergency, ...). If anything impacts your ability to submit **labs** (Terms) or **project milestones**, please contact Dr. Stanger *as early as possible* so that alternative arrangements can be made. If you need to apply for special consideration for the **final exam**, contact AskOtago (see <https://www.otago.ac.nz/study/exams/otago062916.html> for details).

8 Further information

Refer to [Blackboard >> INFO202 >> Information](#) for additional general information that is not specific to INFO 202, such as student support services, academic integrity, and student feedback.

9 Disclaimer

While every effort is made to ensure that the information contained in this outline is accurate, it is subject to change. Changes will be notified in class and via Blackboard, and this document will be updated as required. The latest version can always be found on Blackboard, so you should check Blackboard regularly for updates. It is your responsibility to be informed.

INFO 202 Schedule, Second Semester 2022

as of 7th July

Week of	Lecture	Lecture Topic	Lecturer	Lab	Assessment
11 Jul	1	Introduction	NS	1 • Reintroduction to Tools	
	2	Software Testing 1	NS		
18 Jul	3	Software Testing 2	NS	2 • Software Testing 1	
	4	Issue and Test Driven Development	NS		
25 Jul	5	Debugging and Defensive Programming	NS	3 • Software Testing 2	
	6	Web Development 1 - Fundamentals	MG		
1 Aug	7	Web Development 2 - Framework Methodologies	MG	4 • Server-Side Web Development 1	
	8	Web Development 3 - REST Microservices	MG		
8 Aug	9	Web Development 4 - Ajax / JavaScript	MG	5 • Server-Side Web Development 2	
	10	Web Development 5 - Web Application Testing	MG		
15 Aug	11	Dependency and System Design	NS	6 • Jdbi	Blackboard Test 1 (due 19/8)
	12	Object Relational Mapping	NS		
22 Aug	13	Collections	NS	7 • Web Services (Jooby)	Milestone 1 (due 26/8) • Create Account / Login • Jdbi DAO & Testing • Input Validation • Error Handling • Sequence Diagrams
	14	Software Design Patterns	NS		
29 Aug	Mid-Semester Break				
5 Sep	15	Recap: Where Are We and Where Are We Going?	NS	8 • AJAX Clients (Vue.js)	
	16	Distributed Information Systems	MG		
12 Sep	17	Cloud and Virtualisation	MG	9 • Shopping Cart	
	18	Application Security 1	MG		
19 Sep	19	Application Security 2	MG	10 • Web Service Testing • Sending Email	
	20	Threads and Concurrency 1	MG		
26 Sep	21	Threads and Concurrency 2	MG	11 • Securing the Web App	Milestone 2 (due 30/9) • View Products • Navigation • Create Account / Login • Full Shopping Cart • Styling • Web Service Testing • Sequence Diagrams
	22	Cornucopia of Concepts	NS		
3 Oct	23	Release Engineering 1 - Continuous Integration	DA	12 • Securing the Database	Blackboard Test 2 (due 7/10)
	24	Release Engineering 2 - Release Pipelines	DA		
10 Oct	25	Trends in Development	NS	13 • Continue Project Marking	
	26	Review	NS		

Note: The contents of this schedule may be subject to change during the semester. The first week of semester is academic week 28.

Second semester exam period runs from Wednesday 19th October to Saturday 12th November.