

QBUS6850

Machine Learning for Business

Introduction to the Unit

Prof Junbin Gao

Discipline of
Business Analytics

S1 2022



THE UNIVERSITY OF
SYDNEY

Lecture

❑ This unit is offered by the **Discipline of Business Analytics**



- Unit Co-ordinator & Lecturer: Prof Junbin Gao
Consultation: 10:00-11:00 Tuesdays on Zoom
- Lectures (Week 1 to Week 13)
Time: Mondays 13:00-15:00
Online Live Delivery with Zoom

Tutorials

Time	Week	Venue	Tutor	Tutor Consultation (ZOOM)
Wed 10:00	[wks: 1 to 13]	H69.142 Lab 3 BS Codrington Computer Lab (3)	Mengxi Yang	12:00-13:00 on Thursdays
Wed 12:00	[wks: 1 to 13]	Online-Live	Yi Jiang	14:00-15:00 on Wednesdays
Wed 13:00	[wks: 1 to 13]	H69.142 Lab 3 BS Codrington Computer Lab (3)	Andi Han	17:00-18:00 on Wednesdays
Wed 14:00	[wks: 1 to 13]	Online-Live	Eileen Wang	
Wed 16:00	[wks: 1 to 13]	Online-Live	Eileen Wang	16:00-17:00 on Mondays
Wed 18:00	[wks: 1 to 13]	Online-Live	Yi Jiang	
Thu 12:00	[wks: 1 to 13]	ABS Lecture Studio 1090	Andi Han	
Thu 12:00	[wks: 1 to 13]	Online-Live	Michael Arnold	15:00-16:00 on Wednesdays
Thu 18:00	[wks: 1 to 13]	Online-Live	Mengxi Yang	
Fri 15:00	[wks: 1 to 13]	Online-Live	Jichao Kan	14:00-15:00 on Fridays
Fri 17:00	[wks: 1 to 13]	Online-Live	Jichao Kan	

F2F Tutorials Guidelines

The University will follow all Public Health Orders during the return to campus.

- Masks MUST be worn inside USYD buildings by staff and students.
- All students should practice good hygiene and physical distancing.
- If feeling unwell or have had a positive COVID result you MUST stay away from the campus and attend class remotely where available.
- All the updated information can be found at

[Latest COVID updates.](#)

[Latest student updates.](#)

[COVID safe precautions.](#)



A Short Tour on Canvas and ED

Poll 1

Suggested Reading List

- ❑ *An introduction to statistical learning: With applications in R* (2014), Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani. Springer-Verlag, New York: Springer Texts in Statistics. **(James et al., 2014)**
- ❑ *The Elements of Statistical Learning* (2001), Friedman, Jerome, Trevor Hastie, and Robert Tibshirani. Springer, Berlin: Springer series in statistics. **(Friedman et al., 2001)**
- ❑ *Pattern Recognition and Machine Learning* (2006), Chris M. Bishop, Springer. **(Bishop, 2006)**
- ❑ *Introduction to Machine Learning* (2014), Ethem Alpaydin. The MIT Press. **(Alpaydin, 2014)**
- ❑ *Data Science for Business* (2013), Foster Provost and Tom Fawcett, O'Reilly Media, Inc. **(Provost and Fawcett, 2013)**



Software

❑ **Python** *(used in this course)*

- ❖ Free and works on PCs, Mac, Unix/Linux
- ❖ Does statistical modelling, visualisation and programming
- ❖ Can be used for almost all models to be discussed in this class










(poll 2)

❑ The unit requirements:

- ❖ Attend a 2-hour lecture per week
- ❖ Attend a 2-hour tutorial class per week
- ❖ Submit the group project report – 25%
- ❖ Complete mid-semester exam - 25%
- ❖ Complete the final exam - 50%



Assessment items

Details	Criteria			
Type	Description	Weight	Due	Length
Final exam (Record+) 	Final exam n/a	50%	Formal exam period	2 hours
	Outcomes assessed: LO1 LO2 LO3 LO4 LO5 LO7			
In-semester test (Record+) 	Mid-semester exam n/a	25%	Week 07	1.5 hours
	Outcomes assessed: LO1 LO2 LO3 LO4 LO5 LO7			
Assignment 	Group project Computational analysis and written report	25%	Week 13 Due date: 23 May 2022 Closing date: 30 May 2022	details in the project document
	Outcomes assessed: LO1 LO2 LO3 LO4 LO5 LO6 LO7			
 = group assignment   = Type B final exam   = Type B in-semester exam 				

The maximum number of members in one group is 5. You form groups based on your own preferences, and student from different tutorial streams can be in one group. Later, you will be notified on how to official enrol into groups on Canvas, but you can **start to look for group members now**.



Weekly Schedules

WK	Topic	Learning activity	Learning outcomes
Week 01	Machine Learning Foundation	Lecture and tutorial (4 hr)	LO1 LO2 LO5 LO6
Week 02	Python Machine Learning	Lecture and tutorial (4 hr)	LO1 LO2 LO3 LO4 LO5 LO6 LO7
Week 03	Neural Networks I	Lecture and tutorial (4 hr)	LO1 LO2 LO3 LO4 LO5 LO6 LO7
Week 04	Neural Networks II	Lecture and tutorial (4 hr)	LO1 LO2 LO3 LO4 LO5 LO6 LO7
Week 05	Neural Networks III	Lecture and tutorial (4 hr)	LO1 LO2 LO3 LO4 LO5 LO6 LO7
Week 06	Neural Networks IV	Lecture and tutorial (4 hr)	LO1 LO2 LO3 LO4 LO5 LO6 LO7
Week 07	Mid-term Exam	Lecture and tutorial (2 hr)	LO1 LO2 LO3 LO4 LO5 LO6 LO7
Week 08	Graph Neural Networks	Lecture and tutorial (4 hr)	LO1 LO2 LO3 LO4 LO5 LO6 LO7
Week 09	Advanced Classification Techniques I	Lecture and tutorial (4 hr)	LO1 LO2 LO3 LO4 LO5 LO6 LO7
Week 10	Advanced Classification Techniques II	Lecture and tutorial (4 hr)	LO1 LO2 LO3 LO4 LO5 LO6 LO7
Week 11	Advanced Classification Techniques III	Lecture and tutorial (4 hr)	LO1 LO2 LO3 LO4 LO5 LO6 LO7
Week 12	Recommendation Systems	Lecture and tutorial (4 hr)	LO1 LO2 LO3 LO4 LO5 LO6 LO7
Week 13	Matrix Factorisation Techniques	Lecture and tutorial (4 hr)	LO1 LO2 LO3 LO4 LO5 LO6 LO7



Advice

- ☐ You should spend a minimum of **12** hours per week on this unit.
- ☐ You must attend all lectures & tutorial, and complete all assessment items.
- ☐ You shall have a good grasp of Python

Communication with Staff

☐ For **general administrative inquiries:**

- Contact Ms Darae Jung: darae.jung@sydney.edu.au
- Discipline Executive Officer of the Discipline of Business Analytics, in Room 4082, H70

☐ For **inquiries about teaching materials (Technical)**

- Preferred method of communication is joining the consultation during office hour, and posting your questions on **Ed discussion**
- Enquiries sent by email will NOT be accepted.

☐ For **administrative & all other general inquiries about this unit (Non-technical)**

- Preferred method of communication is verbal, during consultation hour.
- Email correspondence is also preferred.

Communication with Staff

A Rule that you must follow

Emails must be sent from your university email account. On the subject line, you must write **“QBUS6850– Your Name (Your SID) – Keywords of your inquiries”**.

- Many emails are received every day, so there is no guarantee that your emails will be answered immediately.
- Emails sent from non-university email account will not be read & replied.
- Emails with correct subject line will receive high priority.

Need Help?

❑ Discipline of Business Analytics

- Unit Coordinator and Tutors

❑ Business School

- PASS (Peer-Assisted Study Sessions) – Free enrolment

<http://sydney.edu.au/business/learning/students/pass>

- Maths in Business – Free enrolment

<http://sydney.edu.au/business/learning/students/maths>

❑ Faculty of Science

- Mathematics Learning Centre at Level 4, Carlaw Building (Email: mlc.enquiries@sydney.edu.au)

Academic integrity

- Core value of the University of Sydney, in both education and research.
- Doing the 'right thing' even when things seem difficult
- Contributing your own original work to group work and properly acknowledging the work of other people
- Committing fully to participating in group discussions and meeting agreed deadlines
- Legitimate cooperation that is open and transparent
- Understanding the integrity expectations for online exams
- More information: <https://sydney.edu.au/students/academic-integrity.html>



**Get the most out
of your degree
studies!**

Strategies to act with academic integrity



- Planning and time management



- Know your strengths and understand what skills you need to develop



- Quoting, paraphrasing and referencing;
Using citations and references



- Stay in touch with your classmates and teaching staff**



- Knowing when and who to ask for help**

Academic dishonesty

- Plagiarism i.e. copying work from other people or sources without referencing
- Recycling/resubmitting work i.e. re-using part/all of your own assignment from the same or previous semester or other UoS
- Illegitimate cooperation: i.e. copy from each other's work from the same class
- Exam cheating: i.e. bringing unauthorised materials to an exam (i.e. notes/mobile devices), working with another person to complete your exam.
- Contract cheating: i.e. paying others to complete your assessments or exams



Consequences

- Breaches are reported to the Academic Honesty Team for investigation
- You may receive a warning, a penalty or 0 for your assessment
- For group work, all group members may be impacted if there's a breach of academic integrity
- Delayed results which will impact course selection, enrolment, progression, graduation etc.
- Failing the unit
- Serious breaches may result in a finding of misconduct, in which penalties can range from suspensions to being expelled from the University

Did you know....



You need to use APA/AGLC referencing in most of your assignments. Failure to do so may result in your assignments being reported for academic integrity breaches. This could delay your mark and/or may result in a mark penalty.



All group members are responsible for the group assignment submitted, and a breach of academic integrity will impact the group as a whole.



Using private tutoring services or other people to write or complete an assessment on your behalf is a form of contract cheating and is therefore a breach of academic integrity.



Exam integrity is vital. During online exams, specially those that are open book and referencing is not required, you are supposed to put in your own ideas and describe those in your own words. Whenever you use other's work, or your own work for another assessment in the same or a different unit, you need to use citations and references.



Learning resources

- Learning Centre: <https://sydney.edu.au/students/learning-centre.html>
- Study skills at the University: <https://sydney.edu.au/students/browse.html?category=your-studies&topic=study-skills>
- Library: <https://library.sydney.edu.au/>
- Special consideration and arrangement: <https://sydney.edu.au/students/special-consideration.html>
- Peer learning advisors <https://library.sydney.edu.au/help/pla.html>
- Disability support: <https://sydney.edu.au/students/disability-support.html>
- Counselling and mental health support: <https://sydney.edu.au/students/counselling-and-mental-health-support.html>
- Student Representatives Council: <http://srcusyd.net.au/src-help/>
- SUPRA <https://supra.net.au/get-help/>
- Peer-assisted study sessions <https://sydney.edu.au/students/pass.html>

WIL Hub Opportunities: Semester 1 2022

Business Practicum (BUSS1321 /BUSS6104)

Semester 1 2022

Collaborate on real-life projects with partner organisations, gain valued business experience and earn 6 elective credit points towards your degree!

Self-sourced Placement Program (BUSS2200/BUSS6514)

Earn 6 credit points towards your degree for a paid or unpaid placement that you have sourced yourself. Learn more [here](#).

Enrolments now open for Semester 1, 2022 via Sydney Student.



Find out more: <https://www.sydney.edu.au/business/study/student-experience/internships-industry-placements-and-experience.html>

WIL Hub Canvas site: <https://canvas.sydney.edu.au/courses/19623>

WIL Hub Industry Placement Program Winter & Semester 2 2022

China (BUSS2504/6506) & Local (BUSS2100/6500)

The China and Local Industry Placement Programs provide a unique opportunity for you to gain industry experience and earn 6 credit points towards your degree by working (unpaid) with our leading corporate partners.

Work on real projects with real clients applying what you've learned at university to genuine professional practice.

Placements are available in China over the Winter break and Sydney during Semester 2

Applications open: Monday, 21 February 2022



Find out more: <https://sydney.edu.au/students/industry-placement-program.html>
WIL Hub Canvas site: <https://canvas.sydney.edu.au/courses/19623>

Hope you enjoy this unit!

Discipline of Business Analytics

University of Sydney Business School



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