

# Course Introduction

Math2191/Math2302

Applied Research Project/ Analytics  
in Industry 1

# Course staff

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# Course Description

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The Work Integrated Learning experience for the program is about the application of analytics, statistics and operations research in a real-world situation. You will get the opportunity to work on industry project through either placement or project within a workplace that are associated with data analytics. Your knowledge and skills will be applied and assessed in a real or simulated workplace context, with input from industry employers. Your jobs skills on communication, teamwork, project management and problem-solving will be enhanced throughout the WIL experience.

# Learning Outcomes

- **Solve problems** and use **research skills**, including engaging with unfamiliar problems, and identifying relevant strategies.
- Use **analytical skills**, including the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of the analysis.
- **Work in teams** through interacting with others. The University distinguishes between ethical collaboration, which is strongly encouraged, and plagiarism, which is prohibited.
- Demonstrate **presentation skills**, consisting of practising presentations of technical problems and their respective solutions.
- **Manage time** effectively, with both team-based and individually assembled material to be submitted throughout the semester. You will learn to manage your time, balance competing commitments and meet deadlines.

# Overview of Learning Activities

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- Conduct research on your industry project. These include ability to search for, locate, extract, organise, evaluate and use or present information that is relevant to a particular topic.
- Formally define the project requirements and directions based on the available information sources.
- Have meetings with your supervisors to have ongoing feedback.
- Work with your peers on the group projects.
- Present project updates and project outcomes to industry contacts and other students.
- Write a detailed report of your research project and submit it for review.

# Course Resources (Canvas)

## Home Page



### Applied Research Project

MATH2191

School of Science

*"Welcome to Math2191 and Math2302!"*

The course is about the application of analytics, statistics and operations research in a real world situation. You will learn how to think about data in a broad context and what goes on in an industrial research project. You will develop your verbal and written skills, organise the structure of an industrial research problem and learn about professional practice. This course will be delivered through a mixture of face-to-face delivery and individual meetings with industry supervisors and team members, by accessing materials and resources here in Canvas.

*To get started, please review the 'Welcome and Orientation' module, then access the relevant week/topic as needed during the course."*

# Course Syllabus

This course will be delivered ONLINE this semester. As this is a Work Integrated Learning (WIL) subject, we do not have weekly lectures. In the Course Syllabus, the weeks showing “Class” indicate there are lectures on those weeks. They include classes on project preparation, literature review, writing and presentation, group progress presentation and industry talks.

- Class (**Tentative schedule** can be found from Course Syllabus at Canvas). Exact class time schedule will be notified through Canvas announcement.
- Class time: Mondays (2 hours) 4:30--6:30pm.

# General information

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- Most WIL activities will be delivered REMOTELY, except that some projects may require some on-site work. This information can be found from the project information/description.
- For every project/placement, student is expected to work at least 1 day/week for 12 weeks, with a total number of around 120 hours. The exact arrangement with industry can be flexible, say a few intensive weeks at the start, and reduced time in the end.



# 1. Industry Project/Placement

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- Industry placement/project opportunities with detailed project description information posted at Week 1.
- Allocation of the industry projects will be based on selective and matching process. Students will be selected/matched based on your interest, skillsets, academic performance and the project availability.
- Students are required to work in group, have weekly meetings with the industry supervisor and other group members, complete project deliverables and meet the requirement of the industry.

All industry projects are the SAME based on the industry exposure. There is essentially no difference between all projects, whereas there is difference between project delivery outcome!

### 3. Self sourced project/placement

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If you have organised project/placement yourself, or if you have started working on a project/placement not listed at Canvas, please upload one page of information to Canvas>Assignment with **project description** and **industry supervisor contact** information. Your project description has to be approved by the course coordinator first.

# Project allocation

- The industry placement/project allocation is based on **selective/matching process**. Please tell us your preference (up to 5) by filling in the online Qualtrics form (link provided in Week 1 material) before March 1 (11pm), with CV uploaded.
- The industry placement/project application is organised centrally through the course coordinator (except otherwise specified). **Please do not contact the industry supervisors directly about the project application (except being asked to).**
- Once you are placed to an industry project, you cannot change your project.

# Project allocation

- If you do not fill in the preference form, we will randomly allocate you to a project with vacancy, if there is still any left.
- Project allocation are carried out in Week 1 and 2. All students are expected to get projects allocated by the end of week 2.
- In general students work in group on projects, with each group including 2-4 students.
- **Once the project allocation is completed, you will find your allocation results and group members from Canvas>Groups. We will NOT notify the allocation outcome individually.**

# Academic Supervisor's Role

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We will try to allocate one academic supervisor to each project. Students could consult with academic supervisor for general academic guidance and technical help, for example how to conduct literature review, prepare project proposal and final report, and methodology.

But it is not the academic supervisor's responsibility to monitor the project, provide project direction, plan and deliverables. In general, they will also not get involved in assessing project performance.

# Group work

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Once project allocation is completed, **group leader (can take turns to take the role) needs to create a working group channel** such as the Microsoft Team, Slack or the Canvas group discussion, where is the place for regular group discussion and communication.

**You need to invite all group members, your industry supervisor (if there is any) and academic supervisor to this working channel.**

**The kick-off meeting** with all group members, academic supervisor, and/or industry supervisor. This needs to be done prior to Week 3 (preferably end of Week 2)!

# Group work

- Group members are required to have weekly meetings with all group members, regular meetings with your industry supervisor (depending on the negotiation between you and industry supervisor), to keep the project progressing.
- The meetings, group discussions and shared files should be documented at Microsoft Teams, Slack or Canvas group discussion board for future reference. Should any issue arising on group/individual assessment, the documents will be used as the supporting documents.
- Each group needs to submit an agreed Teamwork Contribution for each assessment. **This form needs to be agreed and signed by all group members.** If an agreed contribution cannot be achieved between all group members, a further self and peer evaluation process within the group will be conducted.



# Group work issue

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Should there be any groupwork issue, please raise this issue with the course coordinator no later than week 6, so that we can work on problems/issues at early stage.

Should there be groupwork issue that is reported late that could be solved at early stage, a reduction by up to 10% of the maximum mark applicable for the relevant assessment(s).

# WIL Agreement

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- WIL agreements need to be signed by each student prior to the start of project.
- Agreement template can be found from Canvas>Assignment>WIL agreement
- For **ongoing relationship agreements (the organisation has already got agreement with RMIT)**, it just needs the **Schedule** section in the agreement. **(no industry signature required)**.
- For **new relationship**, The WIL agreement has to be signed by 3 sides--industry, RMIT and yourself.

# WIL agreement

## Two types of WIL agreements

### 1) External project: Work Integrated Learning – Partner Owns IP v1.2

1.1) Ongoing relationship: such as **Coles, Yarra Valley Water, Grantguru, Oxford PharmaGenesis, Strike Meatal Health, IPC health, CSIRO**

No signature is required from industry organisations on your WIL agreement for ongoing relationship WIL. You just need to complete and sign the **Schedule** of the form and send the form back to [stem-w&e-agreements@rmit.edu.au](mailto:stem-w&e-agreements@rmit.edu.au). College WIL team will organise the signature on behalf of RMIT.

# External project continued

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## 1.2) New partnership: including the projects you have organised yourself or not listed in ongoing relations

Please complete the whole form, sign by yourself and the industry partner, and submit the form to [stem-w&e-agreements@rmit.edu.au](mailto:stem-w&e-agreements@rmit.edu.au) . College WIL team will organise the signature on behalf of RMIT.

# External projects (through Riipen)

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**1.3) Project such as Grey-box, Fyto Firefighting AI, Startup Finance Limited, SD Companies SRL.**

No need to sign any WIL agreement.

## 2) Project host by RMIT

Work Integrated Learning - within RMIT  
v1.2.docx

Should you have any question about the WIL agreement, please send the email to [stem-w&e-agreements@rmit.edu.au](mailto:stem-w&e-agreements@rmit.edu.au).

# Assessment

## **1) Project Proposal (30%)**

- **WIL Ready credentials 4%**
- **Project preparation 6%**
- **Project proposal 20%**

## **2) Project progress presentation, 15%.**

## **3) Project final presentation, 15%.**

## **4) Project final report, 40%**

Individual's result will be adjusted by taking the teamwork contribution into account.

# Assessment

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- The details of assessment including rubrics can be found at Canvas. Please read them carefully before you plan for your project.
- Assessments will be submitted and assessed in group, except those project/placements that only require individual work (such as WIL Ready Credentials).
- Your project assignments will be assessed jointly by both academic staff, peers or/and industry supervisors. Industry will be asked to assess extra tasks such as your project management, communication and teamwork skills.



# Special Consideration

Special consideration is an assessment adjustment for **unexpected circumstances** that are outside your control, which:

- have a significant adverse impact on your performance in assessment or
- prevent you from attempting or submitting the assessment.

Use the [online special consideration application](#) to lodge your application and submit supporting documents.

# Academic penalty for late submission

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**The penalty for late submission without a pre-approved extension or special consideration:**  
a reduction by 10% of the maximum mark applicable for the Assessment, for each day or part thereof. An Assessment submitted more than **FIVE** days after the deadline will have a mark of zero recorded for that assessment.

# Group work

- Learning and working effectively as part of a team or group is an extremely important skill, and one that you will refine and use throughout your working life. Group projects should be among the most valuable and rewarding learning experiences. For many students, however, they are also among the most frustrating.
- When you work as a group on a project, you have the opportunity to draw on the different strengths of group members, to produce a more extensive and higher quality project or assignment than you could complete on your own.
- To do this effectively you need to learn group work skills, which are an extremely important part of your professional development. Many professional organisations and employer groups stress the importance of interpersonal and group skills, such as communication, negotiation, problem solving, and teamwork. These skills can be as important as your subject knowledge in enabling you to be an effective professional.

# Ground rules

Ground rules might cover the following matters, for example:

- All ideas and contributions in the group will be valued.
- The work will be divided evenly among the group.
- Group members will take turn chairing group meetings.
- Members who cannot attend meetings will provide notice in advance.
- Notes will be taken during meetings and documented at Teams.
- Ground rules will be reviewed several times throughout the project.
- Problems will be addressed in the group as they arise.
- Bully and racist comments are not permitted.
- Tasks should be completed by the agreed dates.

# Set up a contract

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A useful tool to help with the steps above is a contract. Within the first few weeks of each group task you and your group will need to negotiate and agree to a contract. In this signed agreement, you will outline the project goal, expectation for each group member, policies and consequences.

The agreement must be signed and dated by the group members. The agreement should be posted at the Teams or the Canvas group discussion area so that everyone can access, including the industry supervisor, academic supervisor and course coordinator.

# Teamwork contract

- **GOALS:** What are our team goals for this project? What do we want to accomplish? What skills do we want to develop or refine?
- **Expectations (ground rules):** procedures in place for encouraging discussion, coming to resolution without becoming repetitive, and resolving differences of opinion. For example, what do we expect of one another in regard to attendance at meetings, participation, frequency of communication, procedures to encourage discussion and the quality of work, etc. The contract should focus those behaviours that are crucial to the group's effectiveness.
- **POLICIES & PROCEDURES:** What rules can we agree on to help us meet our goals and expectations?
- **CONSEQUENCES:** How will we address non-performance in regard to these goals, expectations, policies and procedures?

Set rules at the outset and modify them as necessary along the way. For example: anybody who missed a meeting would buy the rest of the group a cup of coffee next time (it is unlikely with the current situation!); or lose 1 point every time.

# Skills in group work

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Group work requires both **interpersonal and process management skills**.

## Interpersonal skills

- Building positive working relationships
- Communicating effectively in meetings
- Negotiating to agree on tasks and resolve conflicts
- Accommodating people with different cultural orientations and work habits

# Interpersonal skills

- Take some time early on to chat with and get to know each of your group mates. The better you know one another and the more comfortable you are communicating with one another, the more effectively you will be able to work together.
- Build a culture of mutual respect within your group. It is best to get over these differences quickly.
- Make sure that you express your views and listen to others. When you disagree, be constructive and focus on the issue rather than the person. Try to find a way forward that everybody can agree to and that isn't the opinion of just one confident or outspoken member.



# Process management skills

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- Identifying group goals and dividing work
- Planning and complying with meeting schedules and deadlines
- Managing time to meet group expectations
- Monitoring group processes and intervening to correct problems
- Interpersonal skills and considerations

# Managing the process

1. **Have clear objectives.** At each stage you should try to agree on goals. These include a timetable for progress on the project as well as more immediate goals (e.g. to agree on an approach to the assignment by Friday). **Each meeting or discussion should also begin with a goal in mind (e.g. to come up with a list of tasks that need to be done).**
2. **Set ground rules.** Discussions can become disorderly and can discourage shyer group members from participating if you don't have procedures in place for encouraging discussion, coming to resolution without becoming repetitive, and resolving differences of opinion.
3. **Communicate efficiently.** Make sure you communicate regularly with group members. Try to be clear and positive in what you say without going on or being repetitive.

# Managing the process

4. **Keep good records.** Communicating on the online discussion for your group provides a good record of discussion. Try to summarise discussions/meetings and especially decisions, and post them to the online discussion so that you can refer back to them. This includes lists of who has agreed to do what.
5. **Stick to the plan.** If you agreed to do something as part of the plan, then do it. Your group are relying on you to do what you said you would do not what you felt like doing. If you think the plan should be revised, then discuss this.
6. **Monitor progress and stick to deadlines.** As a group, discuss progress in relation to your timetable and deadlines. Make sure that you personally meet deadlines to avoid letting your group down.

# Managing the process

7. **Build consensus.** People work together most effectively when they are working toward a goal that they have agreed to. Ensure that everyone has a say, and you listen to everyone's ideas and then try to come to an agreement that everyone shares and has contributed to.
8. **Define roles.** Split the work to be done into different tasks that make use of individual strengths. Having roles both in the execution of your tasks and in meetings / discussions (e.g. A is responsible for summarising discussions, B for ensuring everybody has a say and accepts resolutions etc.) can help to make a happy, effective team.
9. **Clarify.** When a decision is made, this must be clarified in such a way that everyone is absolutely clear on what has been agreed, including deadlines.

# Other skills: academic integrity and time management

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A Credential also known as a "Cred" is a short online course in Canvas, designed to provide you with specific skills and knowledge in a given subject area. RMIT digital credentials are co-designed with Industry to ensure they are recognised and validated by both Industry and future employers.

Once you successfully complete this Credential, you will earn a digital badge which is an online representation of a capability or skill you have attained which can be shared with peers, friends and future employers on your resume and social media platforms. For more information about RMIT Creds please visit [RMIT Creds \(Links to an external site.\)](#) .

# Things remember to do

1. **Fill in** the project preference online form; or provide the self-organised project information at Canvas.
2. **Check canvas** regularly for course update and project allocation, which is expected to complete by the end of Week 1 or 2.
3. Once project **allocation is completed**, “group leader” creates the working group through Microsoft Team or other platforms by including all group members, industry supervisor, course coordinator and academic supervisor. You can start working on Project Preparation, the first assessment to kick off the project.

# Things remember to do

5. Schedule kick-off meeting with all group members, academic supervisor or/and **industry supervisors** ASAP. Good planning lays the groundwork for successfully completing **the tasks**.

**(Please unmute your video while attending group meetings)**

6. Complete WIL Ready and Understanding Australia Workplace Culture credentials

7. Complete the WIL agreement, and upload completed WIL agreements to Canvas.