

CSE Learning & Teaching

Commencing On-Campus Students Edition

Understand how you will learn in the College of Science & Engineering



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Key Messages for Commencing Students

- **Our learning model is designed to increase opportunities for meaningful interaction with teaching staff and peers.** Scheduled classes focus on applying knowledge, solving problems, receiving feedback and working with teaching staff and peers.
- **Face-to-face learning is a central part of your degree.** Across your subjects, you can expect to encounter practicals, laboratories, field trips, workshops, tutorials and lecturer-led sessions focused on clarifying, connecting and consolidating learning.
- **You will be expected to complete preparation activities before class.** These activities provide the foundation for the week's learning and help you get the most from your face-to-face classes.
- **Most first-year subjects include additional activities designed to support your transition into university learning and help you build confidence, belonging and effective study habits.**
- **The model is informed by educational research, student feedback, and successful teaching practices operating across CSE.**

Welcome to learning in the College of Science & Engineering

Beginning a JCU College of Science & Engineering (CSE) degree is an opportunity to develop new knowledge, skills and ways of thinking. Students join our programs from many different educational, professional and personal backgrounds. Regardless of how you arrive, commencing university involves adapting to new ways of learning. University study requires you to take an active role in your own learning.

Our CSE learning experience is designed to support students to engage with learning materials, teaching staff and peers, while developing disciplinary knowledge alongside the practical, analytical and professional skills needed for future study and careers.

An approach informed by student experience and research evidence

Previous students have consistently told us that they value face-to-face learning most when it helps them ask questions, work through difficult concepts, receive feedback, interact with staff and peers, and apply their knowledge. Our CSE approach focuses face-to-face learning on these interactive activities, making the best use of student-staff time. CSE interactive classes are designed to help you consolidate your understanding, build confidence and clarify difficult concepts.

Research on student learning in science, engineering, IT and veterinary science also shows that stronger learning outcomes are achieved when foundational content is introduced before class and class time is then used for interactive learning, discussion, application and feedback. Studies have found students develop deeper understanding, retain more of what they learn, and improve critical thinking when subjects use this approach.¹ Our own experiences delivering various subjects across CSE in this interactive model over the last several years have been positive, with subjects that use face-to-face time for active engagement well-received by students. As new commencing students, you will experience a more consistent approach to learning across CSE subjects that reflects these interactive principles.

Our commitment to equity, access and flexibility

We are committed to ensuring all our students have access to high-quality learning from JCU experts, regardless of external commitments, study patterns, study location, or enrolment mode. Our CSE learning model enables you to engage with foundational materials at a time and pace that suits your needs, revisit challenging concepts when required, and continue learning during periods of illness, travel disruption or other unforeseen circumstances. Research suggests that these approaches improve student success and retention.²

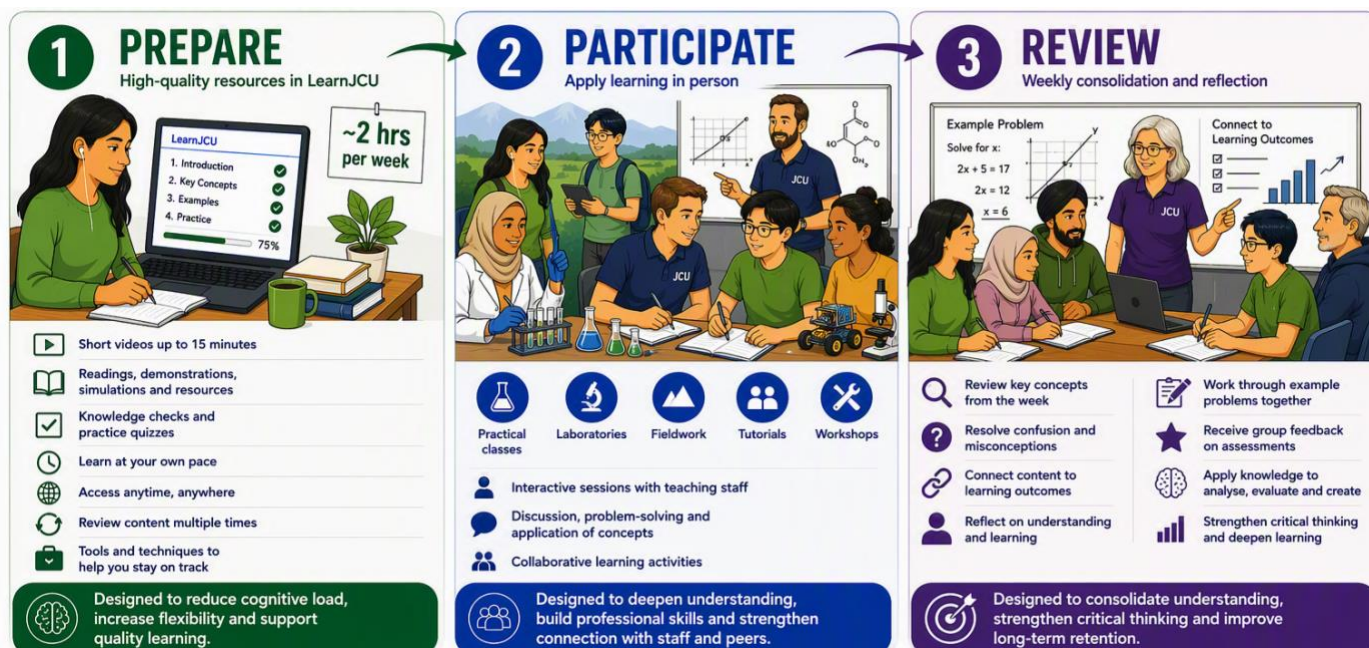
This guide provides information about how you will learn in CSE subjects and how to make the most of your first year at JCU.

¹ See for example: Brito & Terrado (2024); Comez & Ozkan (2025); Dooley et al. (2018); Draughon et al. (2024); Ezech et al. (2022); Gong et al. (2024); Kapur et al. (2022); Karabulut-Ilgu et al. (2018); Rajasekaran et al. (2024); Seery (2015); Serrano Amarilla et al. (2022); Voronina et al. (2017)

² See for example: Flynn (2015); Seery (2015)

How does learning work in CSE?

The CSE learning experience follows a simple cycle: **Prepare** → **Participate** → **Review**.



1. Prepare

Before class, you will engage with learning materials on LearnJCU that introduce the foundational concepts. This may include short videos, readings, online simulations, knowledge checks, practice quizzes, and more. These LearnJCU resources are designed to help you build a foundation for the week's learning and arrive at classes ready to make the most of your face-to-face learning activities.³ Because the materials are available online, you can learn at your own pace, revisit challenging concepts and review content when needed.

2. Participate

Participation activities occur during scheduled classes and other interactive learning sessions. Depending on the subject, sessions may include practical classes, laboratories, field trips, tutorials, and workshops. Participation sessions are where you will work with teaching staff and classmates to apply concepts, practice techniques, explore experimental questions, solve real-world problems, and receive real-time feedback.

3. Review

Review activities help you make sense of the ideas, concepts and skills you have encountered throughout the week. The review stage includes both lecturer-led sessions⁴ and independent study activities. In the lecturer-led sessions, you will revisit key concepts, clarify areas of confusion, work through common questions and example problems, and connect your learning to the subject outcomes. Together, these interactive activities are designed to deepen your understanding, strengthen your critical thinking and support your long-term retention of knowledge.

³ You may hear some academics refer to this approach as “flipped learning” or a “flipped classroom” model.

⁴ You may hear some academics refer to these as “synthesis” or “synthesising” sessions.

What will a typical week look like?

While individual subjects differ, your subjects⁵ will share common elements aligned to the Prepare → Participate → Review model. In a typical week (for a standard, 3 cp trimester-length subject) you can expect:

1. **A Learning Module** in LearnJCU containing all learning materials required for the week or topic.
2. **An Orientation Page** in the module that explains that week's learning outcomes; what you need to do before, during and after class that week; and how the week's activities link to your assessments.
3. **High-quality, self-paced LearnJCU resources** covering the foundational content for the week. You will be expected to work through these materials *before* attending the face-to-face classes for the week (**Prepare** phase). Staff will not re-teach this content during later sessions but rather will build on it. You can expect to spend around 2 hours per week on preparation.
4. **Timetabled participatory learning activities** (such as practicals, laboratories, field trips, tutorials, and/or workshops) focused on applying knowledge, practicing skills, investigating problems and working with peers and teaching staff (**Participate** phase).
5. **Timetabled lecturer-guided interactive review activities** focused on consolidating learning, revisiting key concepts, addressing misconceptions, reviewing feedback and connecting ideas across a topic (**Review** phase).
6. Self-directed study to complete and prepare for assessments, revisit challenging content, and prepare for the next week's learning cycle (**Review** phase).

CSE spans a broad array of disciplines, so individual subjects will organise the timetabled sessions differently. You may therefore see multiple learning sessions each week or a single extended weekly session on your timetable.

Extra support during first year

Starting university can be challenging, and first year is a particularly important transition period. For this reason, most Level 1 subjects include additional activities designed to support you academically, socially and personally during your transition to university study, including:

- understanding university expectations
- managing workload and assessments
- developing effective study habits
- building confidence and independence
- connecting with other students
- accessing support when needed.

These activities will be embedded in your Level 1 subjects and form part of our evidence-informed transition support strategy. The activities are designed to help you establish effective learning habits, develop confidence as a university learner, build connections with your peers, and access support early when needed. In some of your Level 1 subjects, you will see up to three extra timetabled sessions⁶ during which these activities will occur. These are in addition to the standard weekly learning activities described above.

⁵ In 2027, all Level 1 subjects and some higher-level subjects will follow this structure. It will be implemented in all Level 2 subjects by 2028, all Level 3 subjects by 2029, and all Level 4 subjects by 2030. This means that if you take a higher-level subject early (for example, a Level 2 subject in your first year of study), it may not yet follow this approach.

⁶ Depending on the subjects, these may appear in your timetable as "lecture", "seminar", "workshop", or something else.

Frequently Asked Questions

Will I attend face-to-face classes?

Yes. Face-to-face learning is a central part of CSE on-campus programs and includes practical classes, laboratories, field trips, workshops and tutorials, as well as lecturer-led sessions focused on clarifying, connecting and consolidating learning. Time spent in class is used for interactive learning activities, application, discussion and feedback.

Will I see my lecturer every week?

Yes. You will have regular contact with teaching staff throughout the teaching session, including opportunities to interact directly with subject coordinators and lecturers in lecturer-led sessions focused on clarifying, connecting and consolidating learning.

Will I have access to practicals, laboratories and field trips?

Yes. Practical, laboratories and field trips are a cornerstone of CSE programs. These activities continue to provide opportunities for hands-on, experiential learning and professional skill development.

Can I ask questions in person?

Absolutely. Face-to-face sessions are specifically designed to create opportunities for discussion, clarification and feedback. You can ask questions during practicals, laboratories, tutorials, workshops and in lecturer-led review sessions explicitly focused on clarifying, connecting and consolidating learning.

Why aren't there traditional lectures in my subjects?

Research suggests that students learn more effectively when foundational content is completed before class and face-to-face time is used for discussion, problem-solving, feedback and application of knowledge. Your subjects will provide purpose-designed and interactive learning materials that you can engage with before class, at your own time and pace, and revisit when needed. This enables us to use face-to-face time for the activities that students consistently tell us they value most: interaction with teaching staff, opportunities to ask questions, discussion with peers, and support to work through difficult concepts.

What if I prefer learning from live lectures?

Many students arrive having previously learned through lecture-based formats. The CSE learning model is designed to retain the benefits of learning in person with lecturers while making better use of face-to-face time. Like lectures, learning sessions will provide regular opportunities to engage with teaching staff, ask questions, receive feedback and discuss ideas in person (with lecturers and peers). In addition, our CSE approach builds in interactive sessions that are designed specifically for interaction, discussion, feedback and applying concepts, supported by preparatory learning completed beforehand. Research suggests that these more interactive approaches support stronger learning outcomes than relying on one-way information delivery alone.

How will I know what I need to do each week?

Each subject includes a Learning Module in LearnJCU containing the materials and activities for that week or topic. At the start of each module, an Orientation Page explains the learning outcomes, what you need to complete before class, what will happen during scheduled classes, and how the activities relate to assessment. Following the Orientation page each week is the easiest way to stay on track.

How much work am I expected to do for each subject?

The overall workload of a standard 3-cp subject is defined by University policy to be 120 hours (including class time, self-directed preparation and study, and assessment-related activity). On average, you can expect to spend around two hours per week on pre-class preparation activities (Prepare phase) and typically around four hours per week on in-class activities (Participate and Review phases) – although this will vary by subject. The remaining hours are for self-directed study (Review phase) and assessment preparation. Your LearnJCU site will clearly explain what needs to be completed for each subject.

What happens if I don't complete the preparation activities?

The preparation activities provide the foundation for the week's learning, which leads into assessment. Lecturers will build on this foundational content during Participate and Review activities, focusing on the subset of content that students struggle with most, rather than re-teaching all that week's content. Students who complete the preparation activities will gain more value from the face-to-face learning sessions. In Level 1 subjects, teaching staff will introduce specific tools and techniques to help you stay on track with the preparation work.

Are classes compulsory?

Attendance expectations vary between subjects and activities. Some activities, particularly laboratories, field trips and certain practical learning experiences, may have attendance requirements. Your subject outline and teaching staff will explain any specific attendance expectations.

What if I can't make it to a "Review" session?

This will depend on the purpose and design of the session within the subject. Subject coordinators will explain any attendance expectations and what alternatives are available if you are unable to attend. Review sessions are designed to be interactive, allowing students to ask questions, discuss concepts with teaching staff and peers, and apply their learning. While some supporting materials or follow-up resources may be provided, they are not intended to be a direct replacement for participating in the session. If the review session is integrated into another activity such as a practical class, there may be compulsory attendance requirements. Expectations will be clearly communicated.

How will I get to know my peers?

Building connections and a sense of belonging in the JCU and CSE community are an important part of the CSE first-year experience. Most Level 1 subjects will include special transition-focused sessions that include opportunities to connect with your peers. Opportunities for peer interaction are also built into practical classes, workshops, tutorials and other collaborative learning activities throughout the trimester.

What are the extra first-year sessions for?

Extra sessions are designed to support your transition into university learning, help you build connections with peers, and develop the skills and habits needed for long-term success.

If all Level 1 subjects are following this same approach, why does my timetable look different for each subject?

All Level 1 subjects will incorporate the same common elements, but disciplinary differences mean that the actual teaching sessions will look different in different subjects. For example, some subjects will have a laboratory component and others won't, some may integrate the Participate and Review phases into a single extended session, etc. In each subject, your lecturer will explain how the subject operates and what the preparation, participation and assessment expectations are.

I'm enrolled in a Level 2 subject – why doesn't it work the same way as my Level 1 subjects?

We are actively working to implement a consistent experience in all CSE subjects for the student cohort that begins first-year study in 2027. Changes to higher-level subjects are being introduced progressively. For most commencing students, these will align with your study plan: Level 1 subjects will all follow the model in 2027 when you are in your first year of study, Level 2 subjects in 2028 when you are in your second year of study, and so on. However, if you enrol in a subject "early" (i.e. a Level 2 subject in your first year), the new CSE model may not yet be in place (depending on the subject and discipline).

How were students involved in developing this learning approach?

The CSE approach has been developed over an extended period through consultation with academic and professional staff, alongside ongoing formal and informal feedback from students, as elements have been progressively introduced across several subjects. Student feedback helped us shape our design, and we will continue to gather, review and respond to student feedback. We encourage you to actively engage in student feedback mechanisms including formal student evaluations to help us further refine the CSE approach.

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