

Dyscalculia Fact Sheet

What is Dyscalculia?

Dyscalculia refers to a math and numbers-based learning difficulty. Much like dyslexia, dyscalculia can impact learners in several different ways and can vary significantly from person to person. Often students with dyscalculia will have trouble grasping numerical or mathematical concepts and will have difficulty with mathematical processes.

Often dyscalculia is caused by a difficulty in one or both of two main areas:

- Visual-spatial difficulties: problems processing what is seen e.g. on a blackboard or page.
- Language processing difficulties: problems processing what is heard e.g. verbal explanation.

How is a student's college experience impacted by Dyscalculia?

Difficulty	Possible impact in college
Accessibility of teaching and learning material & environment	• Difficulties with what some might consider, basic mathematical or numerical tasks or processes such as adding, subtracting, multiplying or dividing. • Difficulty knowing which mathematical process should be employed based on context. • Difficulty keeping up with lectures featuring numerical or mathematical concepts. • Difficulty, or inability, with notetaking during classes/lectures involving the copying and transferring of mathematical equations. • Completing academic tasks may take significantly longer, particularly if students need to spend extra time converting materials into accessible formats. • Reduced reading speed and comprehension skills where numbers are present affecting performance in class and exams. • Poor short-term memory resulting in difficulty retaining Information.

Managing Assistive Technology (AT) and other University Supports	• Although AT has significantly enhanced the participation of students with Dyscalculia, learning to use new AT can initially take extra time. • Types of AT which students may use include calculators, supportive applications, recording devices, etc. • Maths Centre: Students with Dyscalculia may require further academic support of math tutor or avail of the 1-1 math's centre support. Availability may vary and students may not recognise until past deadline times that they require this support. Onus is generally on the student to avail of these supports. • Using AT may slow the student's speed of work such as not being able to complete equations without having access to supports, making it more difficult to complete assignments and perform under the time pressures of exams.
Other difficulties	• Other difficulties can include telling the time using an analogue watch or clock, handling money or calculating change. • Students with Dyscalculia often experience difficulty with organisation which can lead to ineffective time or workload management (meeting deadlines etc.). • There is a high incidence of co-diagnosis of dyslexia with dyscalculia. This obviously leads to greater difficulties for the student. Please refer to the Dyslexia Fact sheet for more information. • Students who have been recently diagnosed may experience emotional difficulties and/or difficulties with practical tasks. Furthermore, this can affect a student's self-esteem and confidence. • Students entering college straight from secondary school may not be used to the classroom or exam supports as these may differ from those previously experienced throughout their second-level education. Those recently diagnosed may not have experienced any supports previously.

How can you support a student with Dyscalculia?

1. Student-Centred Approach:

- If you are in doubt about how to support a student at any time, **ask the student** – they are the experts of their own needs!
- Create a space for students to **feel comfortable approaching you with any issues** (e.g. provide contact and student office hour details etc.). Many students with dyscalculia will have had difficulties with maths throughout primary and secondary school and as such choose courses at UCD they believe will not include a maths component. However, many programmes include modules on statistical analysis or quantitative research methods. This can be a shock for some students who will then assume then cannot complete this core module.
- Implement any [classroom](#) and [exam](#) accommodations which were determined at the **student's Needs Assessment**.

2. Teaching and Learning:

- Be guided by [Universal Design principles](#) when designing coursework.
- **Provide lecture notes, in a suitable format, in advance of the class.** Providing notes/slides before lectures helps students to focus and engage in class rather than becoming stressed and overwhelmed with notetaking. This may allow for more time to be spent listening and understanding mathematical equations in class when support is available.
- **Encourage** students to view the modules in a **practical** rather than theoretical or abstract way can be very helpful.
- **Provide additional explanatory notes** to mathematical equations and numeracy content so the student has the opportunity to go over this after class (understanding the why and how).
- Read PowerPoint **slides aloud** and **describe any diagrams or visual aids** with data or numerical content attached.
- **Provide reading lists in advance and assistance with prioritising readings** for students who require additional time to go through the content. Producing a prioritised, annotated reading list can help students to focus on the most important readings.

- New concepts should be introduced **using concrete examples** only moving to more abstract concepts after these examples have been thoroughly understood by the student.
- **Multi-sensory teaching** can help students who have a difficulty with a particular delivery method e.g. **visual or aural**.
- Present mathematical processes or procedures in a number of ways – often students will grasp a concept if it is approached in an **alternative way**.
- **Provide a clear schedule of assessment** for the module. Providing a detailed guide to how the course is assessed will help students to understand what is expected of them. **Providing sample answers or templates** for assignments is also extremely helpful.
- **Permit the student to use Assistive Technology** in the classroom.
- Consider the **exam needs of the student for in-class or mid-semester exams** (e.g. does the student require a computer/assistive technology/scribe?).
- Support the student if they have **difficulties meeting deadlines**.

3. Communication:

- Ensure all material presented on slides/whiteboard is **communicated verbally**. Less emphasis on written content and more on verbal communication can lessen the pressure on a student to scan written content on slides in a short time frame. Furthermore, this will allow students to allocate more focus on understanding the content of the lecture.
- Provide a **brief orientation** at the start of each module, regardless of year of study, to show students how to access material on Blackboard, how to use relevant library databases and how to find other useful resources.
- **Giving feedback** on draft assignments can help students improve their writing skills. Guidance on proofreading, editing and structure can be particularly useful.
- **Encourage students to ask questions** at all stages if they are having difficulty.
- **Encourage students to attend the UCD Maths Support Centre (MSC)** and to disclose to their tutor that they have dyscalculia. Staff members in the MSC have had disability awareness training.