iSTEM – assessment advice

# Assessment

iSTEM is a department approved elective course and is not eligible for credentialing on the Record of School Achievement (RoSA).

The scheduling of assessment activities and the weightings applied should reflect the school's organisation of the course. Students should be given the opportunity to demonstrate their maximum level of achievement relative to the course performance descriptors.

## General performance descriptors

Schools may choose to use general performance descriptors to describe performance at each of 5 grade levels.

Table 1 – Performance descriptors for the A-E grade scale

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| Grade | Performance descriptor |
| A | The student has an extensive knowledge and understanding of the content and can readily apply this knowledge. In addition, the student has achieved a very high level of competence in the processes and skills and can apply these skills to new situations. |
| B | The student has a thorough knowledge and understanding of the content and a high level of competence in the processes and skills. In addition, the student is able to apply this knowledge and these skills to most situations. |
| C | The student has a sound knowledge and understanding of the main areas of content and has achieved an adequate level of competence in the processes and skills. |
| D | The student has a basic knowledge and understanding of the content and has achieved a limited level of competence in the processes and skills. |
| E | The student has an elementary knowledge and understanding in few areas of the content and has achieved very limited competence in some of the processes and skills. |

## Planning for assessment

All outcomes for the course are addressed in every topic allowing for flexibility in planning for assessment. In developing the assessment schedule for this course, teachers may find it useful to map each planned assessment activity to outcomes that are best achieved by that task. Determining a project for each topic at the beginning of the planning process can help guide the development of effective and authentic assessment. It is important to ensure a balance of outcomes across the assessment schedule.

iSTEM utilises problem, project, and inquiry-based learning pedagogies and these should be reflected in assessment planning. Determining what knowledge and skills you want to assess are essential to identify learning activities that meet the needs of students.

The course structure should guide the form and number of assessment activities. Combining topics and integrating content can provide greater opportunity for students to demonstrate deeper knowledge and understanding of the topics and reduce the number of assessment items required.

### Designing assessment activities

Quality assessment practice involves designing assessment activities that enable students to demonstrate their achievements and growth throughout the duration of the course, using a range of task types.

The aim of iSTEM is to engage and encourage student interest and skills in STEM, appreciate the scope, impact and pathways into STEM careers while learning how to work collaboratively, entrepreneurially, and innovatively to solve real-world problems. Teachers should consider this aim when developing assessment items for the course.

Assessment should include criteria to clarify what aspects of learning are being assessed and enable students and teachers to use feedback effectively and reflect on the learning. In selecting and developing activities for the purpose of assessing and reporting, teachers should use a range of different approaches.

Quality assessment activities should:

* provide opportunities to gather evidence about student achievement in relation to the course outcomes
* enable students to demonstrate their understanding of STEM principals and processes and promote deeper understanding
* provide evidence of students’ attainment of practical skills, knowledge of technologies and their impact on society
* enable students to demonstrate their ability to solve problems and produce design solutions
* include the use of collaboration, creative and critical thinking skills
* foster the development of project management and entrepreneurial skills
* show connections between course activities, STEM careers and career pathways
* be inclusive and accessible, catering for the individual needs of students.

### Assessment of learning

iSTEM provides students with authentic learning contexts that simulate real-world practice. Students are expected to demonstrate evidence of their learning using processes that closely emulate real-world practice used in industry.

Students are expected to demonstrate the application of practical skills through the completion of problem-solving tasks and projects. Students need to document design processes in the completion of tasks and projects using written, verbal, or other communication strategies.

Documentation of design thinking processes could utilise, but are not limited to:

* design portfolios
* engineering reports
* scientific reports
* process diaries
* design notebooks.

Students are encouraged to share their processes using:

* pitches
* oral presentations
* podcasts
* prepared digital recordings (video/audio).

Other presentation techniques could include:

* posters
* displays
* infographics
* case studies.

Activities that engage students in inquiry-based learning, research and critical thinking are important evidence of learning in iSTEM. These might include independent and group research tasks, research assignments, critical reviews, market research, needs analysis or empathy map.

## Feedback

There are plenty of opportunities for [assessment for, as and of learning](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/understanding-the-curriculum/assessment/approaches) in iSTEM as well as providing and receiving effective [feedback](https://education.nsw.gov.au/teaching-and-learning/professional-learning/teacher-quality-and-accreditation/strong-start-great-teachers/refining-practice/feedback-to-students). Self and peer assessment are important tools along with other strategies such as developing success criteria. When students contribute to developing assessment criteria in a meaningful way, they also typically perform at a higher level and tend to view assessments as meaningful opportunities for feedback and growth as they have a deeper understanding of its purpose.

### Peer assessment

iSTEM encourages the active involvement of students in the learning process. Opportunities exist for individual and collaborative work. Activities involving peer assessment might include evaluating the contributions of individuals to a group task and reflecting on a peer presentation.

### Self-assessment

iSTEM encourages students to become self-directed learners. Opportunities exist for students to reflect on their progress towards the achievement of the course outcomes. The completion of weekly student reflections provides the basis for improving their learning through identifying successes and areas for growth, as well as assisting in developing critical and reflective thinking skills. Developing self-assessment skills is an ongoing process that becomes increasingly more sophisticated and self-initiated as a student progresses through the course.