Assessment and Reporting in Industrial Technology Stage 6

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<tr>
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This document contains the NSW Education Standards Authority requirements for assessing and reporting achievement in the Year 11 and Year 12 courses for the Higher School Certificate, and provides details of the HSC examination in this course. From time to time, changes are made to HSC assessment and examination requirements. Such changes will be made available through updates to these materials. Please note that the version on the NSW Education Standards Authority website is always the current version.
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Introduction to Assessment in Stage 6

The NSW Education Standards Authority (NESA) promotes a standards-referenced approach to assessing and reporting student achievement.

Assessment is the process of gathering valid and useful information and making judgements about student achievement for a variety of purposes.

In Stage 6, those purposes include:

- assisting student learning
- evaluating and improving teaching and learning programs
- providing evidence of student achievement and course completion in Year 11 and Year 12 courses
- providing data for the end of school credential, the Record of School Achievement (RoSA) or Higher School Certificate (HSC).

Schools are required to develop an assessment program for each Year 11 and Year 12 course. NESA provides information about the responsibilities of schools in developing assessment programs in course-specific assessment and reporting requirements and in Assessment Certification Examination (ACE).

Assessment for, Assessment as, Assessment of Learning

Assessment is an essential component of the teaching and learning cycle. Assessment for, assessment as and assessment of learning are approaches that enable teachers to gather evidence and make judgements about student achievement. These are not necessarily discrete approaches and may be used individually or together and formally or informally.

Assessment is most effective when students:

- are involved in setting learning goals
- know and understand assessment criteria
- are able to monitor their own learning and reflect on their progress
- receive feedback that helps them understand how to improve their learning.
School-based Assessment in Stage 6

All teaching and learning activities are considered important for understanding course content and developing knowledge, understanding and skills in a subject. School-based assessment involves a range of informal (formative) assessment and formal (summative) assessment to provide information about student achievement of syllabus outcomes. Informal and formal assessment assists teachers to make judgements about student progress. A range of assessment activities and tasks provides opportunities for students to demonstrate achievement of syllabus outcomes in different ways.

Informal assessment

Teachers use informal assessment opportunities throughout the teaching and learning cycle to gather evidence about how students learn and what they know. Informal assessment includes activities undertaken and anecdotal evidence gathered throughout the teaching and learning process in a less prescribed manner than formal assessment.

These activities provide evidence for teachers and inform feedback to students in relation to improving their learning. Informal assessment may include a range of strategies such as questioning, class discussion, observations and student self-evaluation.

Formal assessment

Formal school-based assessment provides opportunities to gather evidence about student achievement of syllabus outcomes in different ways to the HSC examinations. Formal assessment tasks are those which students undertake as part of the school-based assessment program, reflecting specific course requirements, components and weightings.

A formal assessment task may contain more than one part. The task notification should detail the requirements for each part, including that all parts are to be submitted and/or completed together.

Tests of limited scope (ie include a small number of content areas or topics or modules) will continue to be relevant and appropriate methods of formal assessment. These types of tasks are not considered as formal written examinations.

A formal written examination is defined as a task such as a Half Yearly, Yearly or Trial HSC Examination completed during a designated examination period. It is undertaken individually, under supervised examination conditions and includes one or more unseen questions or items. A formal written examination is used to gather evidence about student achievement of a range of syllabus outcomes, at a point in time. A formal written examination is often in the format of an HSC examination and typically draws from most or all content areas or topics or modules completed at that point in time. Schools are able to schedule more than one written examination to provide opportunities for students to prepare for and experience examination conditions. However, only one formal written examination can contribute to a formal assessment schedule.

Evidence gathered through formal assessment assists teachers to report on student achievement in relation to syllabus outcomes and standards at a point in time, and is often used for grading or ranking purposes. The components and weightings and the prescribed nature of some tasks ensure a common focus for school-based assessment in a course across schools, while also allowing for flexibility in the design of some tasks at the school level.

Further guidance and advice can be found on the NESA website.
Year 11 Industrial Technology School-based Assessment Requirements

The components and weightings for Year 11 are mandatory.

<table>
<thead>
<tr>
<th>Component</th>
<th>Weighting %</th>
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</thead>
<tbody>
<tr>
<td>Knowledge and understanding of course content</td>
<td>40</td>
</tr>
<tr>
<td>Knowledge and skills in the management, communication and production of projects</td>
<td>60</td>
</tr>
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<td></td>
<td>100</td>
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</tbody>
</table>

The Year 11 formal school-based assessment program is to reflect the following requirements:
- three assessment tasks
- the minimum weighting for an individual task is 20%
- the maximum weighting for an individual task is 40%
- only one task may be a formal written examination.
Year 12 Industrial Technology School-based Assessment Requirements

NESA requires schools to submit a school-based assessment mark for each Year 12 candidate in a course. Formal school-based assessment tasks are based on course requirements and components and weightings that contribute to the determination of the final mark for a course. The mark submitted by the school provides a summation of each student’s achievement measured at several points throughout the course.

The marks submitted for each course group at a school should reflect the rank order of students, and must be on a scale sufficiently wide to reflect adequately the relative differences in student performances. The actual mark should not be revealed to students as it is subject to moderation and may become confusing for students when they receive their results. Students must be informed that they can obtain their Assessment Rank Order Notice from Students Online after the last HSC examination at their centre and within the period of time for appeals.

The school-based assessment marks submitted to NESA for Year 12 must not include measures of outcomes that address values and attitudes or reflect student conduct. Schools may decide to report on these separately to students and parents.

The collection of information for the Year 12 school-based assessment mark must not begin before the completion of the Year 11 course.

The components and weightings for Year 12 are mandatory.

<table>
<thead>
<tr>
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<th>Weighting %</th>
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<tbody>
<tr>
<td>Knowledge and understanding of course content</td>
<td>40</td>
</tr>
<tr>
<td>Knowledge and skills in the design, management, communication and production of a major project</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>100</td>
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</tbody>
</table>

The Year 12 formal school-based assessment program is to reflect the following requirements:  
- a maximum of four assessment tasks  
- the minimum weighting for an individual task is 10%  
- the maximum weighting for an individual task is 40%  
- only one task may be a formal written examination with a maximum weighting of 30%.

Information about the formal written examination in Industrial Technology

This task may assess a broad range of course content and outcomes. Schools may choose to replicate the timing and structure of the HSC examination.

If a school includes the development of the externally assessed Major Project in conjunction with the written paper, the combined weighting of the tasks must not exceed 30%.

Information about school-based assessment of the Major Project

Schools are reminded that the use of the external marking criteria to assess HSC project work at school is not appropriate.
The progress of the Major Project should be assessed in other valid ways, such as oral presentations or reports on progress linked to other syllabus outcomes.

The following examples provide two possible approaches for the formal assessment of the major project.

**Example 1: Design and Planning – Presentation**
A presentation following the completion of the design and planning, assesses a student’s knowledge, understanding and skills at a key point in time.

A presentation may require students to include:

- research and resource selection
- development of ideas including sketching, drawings and/or visual communication
- appropriate design development including modeling and testing
- planning, including timelines.

**Example 2: Project Development and Management – Report**
A report after the completion of substantial aspects of the development and production of the major project.

A report may require students to:

- provide evidence of how WHS protocols have contributed to the safe development of the major project
- provide evidence of how thorough research and planning have contributed to the production of the major project
- evaluate the management strategies in place including any outsourcing that may have been conducted
- evaluate the production of the major project including the processes and equipment used.
HSC Examination Specifications

The external HSC examination measures student achievement in a range of syllabus outcomes.

The external examination and its marking relate to the syllabus by:
- providing clear links to syllabus outcomes
- enabling students to demonstrate the levels of achievement outlined in the performance band descriptions
- applying marking guidelines based on criteria that relate to the quality of the response
- aligning performance in the examination each year to the standards established for the course.

Industrial Technology HSC Examination Specifications

The examination will consist of a written paper worth 40 marks and a Major Project worth 60 marks.

Written Paper

(40 marks)

Time allowed: 1 hour and 30 minutes plus 5 minutes reading time.

There will be six separate written papers, one for each industry focus area.

Each paper will consist of three sections.

Section I – Industry Related Manufacturing Technology

(10 marks)

- There will be objective response questions to the value of 10 marks.
- Questions will be specific to each industry focus area.

Section II – Industry Related Manufacturing Technology

(15 marks)

- There will be short-answer questions to the value of 15 marks.
- Questions will be specific to each industry focus area.
- Questions may contain parts.
- There will be approximately 6 items in total.
- At least one item will be worth from 4 to 6 marks.

Section III – Industry Study

(15 marks)

- There will be one structured extended response question.
- The question will be based on the Industry Study, and will be common to all of the Industrial technology written examination papers.
- Candidates will be required to answer the question in relation to their specific industry focus area.
- The question will have an expected length of response of around four pages of an examination writing booklet (approximately 600 words) in total.

Major Project

(60 marks)

The Major Project will consist of an individual product of one or more related items and an accompanying management folio. The folio, which will document the development of the project, is to include a statement of intent, and details relating to design, planning,
management and workplace communication, and evidence of skills and knowledge associated with the industry focus area.

See Requirements for The Major Project.
Requirements for the Major Project

Each candidate must undertake and present, on an individual basis, a Major Project consisting of a product and an accompanying management folio, which will be examined together. The Major Project includes the practical hands-on activity of carrying the project through to completion and the documentation, in a management folio, of all the steps involved in this process.

The Major Project must include evidence of the range and depth of skills and knowledge developed in the course, and may incorporate materials, processes and components drawn from outside the focus area where appropriate.

The Major Project must include a management folio where the use of computer software applications is evident. The management folio will document the development of the project. Included in the folio will be a statement of intent and details relating to design, management, communication, production and evidence of skills and knowledge associated with the studied focus area. Students need to select appropriate samples of work that reflect the processes they have followed and that provide information showing how they have met the Major Project examination criteria.

Folio parameters

The folio will be limited to 80 written A4 pages OR 40 written A3 pages printed on ONE side only. Note that the page limit includes the title page, index, bibliography, design ideas, concept sketches and detailed drawings, as well as information presented on displays or noticeboards.

Students who need to use a combination of A3 and A4 pages to display their work to best effect in their folios must keep to the overall page limit, using $1 \times A3$ page = $2 \times A4$ pages as a guide.

Other media-based or multimedia-based materials used in a student’s folio should not exceed six minutes viewing time in total.

Folio format

- The folio should be presented in an A4 or A3 folder.
- A clear and easily read font equivalent in size to 12-point Times New Roman should be used for text.
- Folio pages should be numbered.

Advice regarding project size

The physical size of the Major Project needs to be carefully considered. Teachers and students should be mindful of:

- The cost of materials
- The complexity and physical size of projects.

High marks are regularly achieved by students who have projects that are of modest cost, use minimal materials and do not require an excessive student time commitment.
Advice regarding prototypes, models and testing items

Depending on the type of project, prototypes, models and/or results of testing the project or its component parts may be submitted in addition to the folio parameters above. These should be relevant to the project and students will need to indicate their purpose and provide clear evidence of further action as a result of prototypes, models and/or testing. Simple labelling of these items is not included within the folio page limit.

Advice regarding graphics and multimedia-based projects

Graphics projects that are paper-based, eg architectural drawings, magazines, posters or comic books, or are multimedia based, eg web pages or animations, are not included in the folio page limit as these are the products, not the project folios.

Advice regarding supervision of the development of major projects

Development of the Major Project may commence from the beginning of the HSC course.

Schools must have procedures in place that will allow effective supervision of the development of students’ Major Projects. This is particularly the case where work is done away from school.

Note that, as it is intended that the syllabus content is taught through the development of the submitted project, most of the project is to be completed at school under the supervision of the class teacher.

Projects will only be marked away from school sites in exceptional circumstances and only with the express permission of NESA before the project is started during the first term of the course. Schools must be confident that effective supervision and sufficient documentation of this work is possible before giving consent for students to begin work on their Major Project.

Advice regarding certification of major projects

Students will be required to certify that the Major Design Project is their own original work, and that any material drawn from other sources and any outside assistance is acknowledged in the Practical Projects Certification/Declaration Form. Group projects are not permitted. Group projects are not permitted.

Teachers must certify that the work has been completed under their supervision, and that the rules and procedures detailed here have been followed.

The principal must be able to endorse the teacher’s declaration that the work:
- has been done under the teacher’s supervision at school or at other premises as documented in the Practical Project: Record of Student’s Progress
- is the student’s work consistent with earlier drafts and other examples of the student’s work
- was completed by the due date.

On occasions it may be necessary for some minor aspect of the Major Project to be undertaken by some other person or agency. In such cases, the contribution of the outside agent/organisation must be documented in the management folio.

Students will not be given credit for actual work completed by others. Justification for, and of, such work may be recognised in the marking of process.
The teacher must keep a brief written record of each student’s progress throughout the Major Project. This should not be submitted with the project but may be requested in exceptional circumstances where the examiners require further information. This record should be retained by the school together with assessment records. A Practical Project: Record of Student’s Progress is available to download from Schools Online.
## Major Project examination criteria

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<tr>
<th>Components</th>
<th>Criteria</th>
<th>Marks</th>
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| **Design, management and communication** | Documentation of the Major Project from concept to completion, including:  
  - statement of intent  
  - research  
  - sketching and idea generation  
  - prototyping, modelling and testing  
  - production and working drawings  
  - selection and justification of appropriate materials, processes and resources  
  - evidence of project management including a record of the production of the project  
  - timeline plan – projected order of production including estimation and evaluation of time allocation  
  - finance plan – projected cost and an analysis of actual costs of materials and services (if applicable)  
  - evidence of (WHS) and safe working practices  
  - appropriateness of design and/or design modification  
  - evidence of a range of presentation skills and techniques  
  - evidence of a range of ICT skills  
  - ongoing evaluation of the Major Project and its relationship to the statement of intent, research and planning | 20    |
| **Production**                     | quality of the product  
  - evidence of a range of skills  
  - degree of difficulty  
  - links between planning and production  
  - use of appropriate materials, components, processes and technologies  
  - evidence of solutions to problems in production | 40    |
|                                   | **Total**                                                           | 60    |
Adjustments to Assessment for Students with Special Education Needs

It is a requirement under the Disability Standards for Education 2005 for schools to ensure that students with special education needs can access and participate in education on the same basis as other students.

Some students with special education needs will require adjustments to assessment practices in order to demonstrate what they know and can do in relation to syllabus outcomes and content.

These may include:
- adjustments to the assessment process. Some examples include additional time, rest breaks, the use of a reader and/or scribe or specific technology
- adjustments to assessment activities. Some examples include rephrasing questions, using simplified language or alternative formats for questions
- alternative formats for responses. Some examples include writing in point form instead of essays, scaffolded structured responses, short objective questions or multimedia presentations.

Schools are responsible for any decisions about adjustments to course work and formal school-based assessment tasks throughout Year 11 and Year 12. Decisions regarding adjustments should be made in the context of collaborative curriculum planning. To access adjustments for the HSC examinations, an application for Disability Provisions must be submitted to NESA.

Providing adjustment does not restrict a student’s access to the full range of grades or marks.

Examples of adjustments to assessment for students with special education needs can be found in course support materials. Additional advice is available on the NESA website.
Industrial Technology Life Skills

Students undertaking the Industrial Technology Life Skills course will study selected outcomes and content informed by a collaborative curriculum planning process. Assessment should provide opportunities for students to apply their knowledge, understanding and skills to a range of situations or environments. Students undertaking Life Skills courses are not required to complete formal assessment tasks. Teachers are best able to determine the progress of the student.

Students may demonstrate achievement in relation to Industrial Technology Life Skills outcomes independently; with adjustments or with support. The type of adjustments and support will vary according to the particular needs of the student and the requirements of the activity.

Additional information about Life Skills eligibility, programming, planning and assessment is available on the NESA website.
Reporting in Stage 6

Year 11

Schools are responsible for awarding a grade for each student who completes a Year 11 course (except Life Skills and VET courses) to represent their achievement. These grades are determined by the student’s performance in relation to the Common Grade Scale for Preliminary Courses. Teachers make professional, on-balance judgements about which grade description best matches the standards their students have demonstrated by the end of the course.

Teachers are required to ensure that the grades awarded are consistent with published standards. This means that the grade a student receives in one school can be compared to the same grade anywhere in NSW. To ensure judgements are consistent with statewide standards, teachers compare their student work with work samples on the NESA website that are aligned to the A to E common grade scale. The grade awarded is reported on the student’s Record of Student Achievement (RoSA), a cumulative credential that allows students to accumulate their academic results until they leave school.

Year 12

The use of both school-based assessment and external examinations of student achievement allows measurements and observations to be made at several points and in different ways throughout the Year 12 course. Taken together, they provide a valid and reliable assessment of students’ demonstration of the knowledge, understanding and skills described for each course.

Students who leave school prior to the Higher School Certificate examinations will receive a RoSA. It records grades for their completed Stage 5 and Year 11 courses and any participation in Stage 6 courses that were not completed.

The HSC credentials received by students report both the school-based assessment and external examination measures of achievement.

Typically, HSC results comprise:
- a moderated assessment mark derived from the mark submitted by the school and produced in accordance with NESA requirements for school-based assessment
- an examination mark derived from the HSC external examination
- an HSC mark, which is the average of the moderated assessment mark and the examination mark
- a performance band, determined by the HSC mark.

For the HSC, student performance in a Year 12 course is reported against standards on a course report.

The course report contains:
- a level of achievement for the performance band descriptors
- an HSC mark located on the performance scale
- a school-based assessment mark
- an examination mark.

The course report also shows graphically the state-wide distribution of HSC marks of all students in the course. The distribution of marks is determined by students’ performances against the standards and not scaled to a predetermined pattern of marks.