



Assessment and Reporting in Industrial Technology Stage 6

Effective from	2011 (Preliminary and HSC courses)
Date published	October 2010

This document contains the Board of Studies' requirements for assessing and reporting achievement in the Preliminary and HSC courses in Industrial Technology 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 this document. Please note that the version on the Board of Studies website is always the current version.

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‘Requirements for Major Project’ updated October 2010.

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Published by Board of Studies NSW
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2010651

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Assessment in Stage 6

Assessment is the process of gathering information and making judgements about student achievement for a variety of purposes. In the Preliminary and HSC courses those purposes include:

- assisting student learning
- evaluating and improving teaching and learning programs
- providing evidence of satisfactory achievement and completion in the Preliminary course
- providing the Higher School Certificate results.

Assessment for Learning provides a useful approach for the delivery of the Industrial Technology Preliminary and HSC courses. It provides opportunities in the context of everyday class activities for students to demonstrate their learning.

The approach is most effective when students:

- are involved in setting learning goals
- know and understand standards and expectations about what is expected and the standards of work
- receive feedback that helps them understand the next steps in their learning and plan how to undertake the next steps.

Reporting achievement at the HSC

The Higher School Certificate credentials received by students are used by the Board to report both the internal and external measures of achievement. Higher School Certificate results in Industrial Technology comprise:

- **an assessment mark** derived from the mark submitted by the school and produced in accordance with the Board's requirements for the internal assessment program
- **an examination mark** derived from the HSC external examination
- **an HSC mark**, which is the average of the assessment mark and the examination mark
- **a performance band**, determined by the HSC mark.

Student performance in an HSC course is reported against standards on a course report. The course report contains a performance scale for the course describing levels (bands) of achievement, an HSC mark located on the performance scale, an assessment mark and an

examination mark. The course report also shows, graphically, the statewide 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.

The use of both internal assessment and external examinations of student achievement allows measurements and observations to be made at several points and in different ways throughout the HSC course. Taken together, the external examination and internal assessment provide a valid and reliable assessment of the achievement of the knowledge, understanding and skills described for each course.

The Board of Studies uses a standards-referenced approach to reporting student achievement in the Higher School Certificate. The standards in the HSC are:

- the knowledge, skills and understanding expected to be learnt by students – the syllabus standards
- the levels of achievement of the knowledge, skills and understanding – the performance standards.

Both the syllabus standards and the performance standards are based on the aims, objectives, outcomes and content of the course. Together they specify what is to be learnt and how well it is to be achieved. Teacher understanding of the standards comes from the aims, objectives, outcomes and content in the syllabus together with:

- the performance descriptions that summarise the different levels of performance
- HSC examination papers and marking guidelines
- samples of students' achievement, collected in the standards packages and published on the Board's Assessment Resource Centre website.

Internal assessment

This section should be read in conjunction with advice on internal assessment in the Board's [Assessment Certification and Examination \(ACE\) Manual](#).

Preliminary course

The suggested components and weightings are designed to give guidance for the school's assessment of student achievement in the Preliminary course. They may be varied to suit school needs.

HSC course

The Board requires schools to submit an assessment mark for each HSC candidate in Industrial Technology. The internal assessment mark submitted by the school provides a summation of each student's achievements 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.

Internal assessment provides a measure of a student's achievement based on a wider range of syllabus content and outcomes than may be covered by the external examination alone. The assessment components and weightings to be applied ensure a common focus for internal

assessment in the course across schools, while allowing for flexibility in the design of tasks. A variety of types of task should be used to give students the opportunity to demonstrate outcomes in different ways and to improve the validity and reliability of the assessment.

The standards-referenced approach to assessment for the HSC involves schools ensuring that:

- assessment tasks reflect the weightings and components specified in this document
- tasks are designed to focus on objectives and outcomes
- the types of assessment task are appropriate for the outcomes being assessed
- students are given the opportunity to demonstrate their level of achievement of the outcomes in a range of different task types
- the assessment criteria for each task are such that higher marks are gained by demonstration of better achievement in relation to the syllabus outcomes
- students know the assessment criteria before they begin a task
- marks earned on individual tasks are expressed on a scale sufficiently wide to reflect the relative differences in student performances.

Students should receive meaningful feedback about what they are able to do, and what they need to do in order to improve their level of performance.

The HSC examination

The external HSC examination provides a measure of student achievement in a range of syllabus outcomes that can be reliably measured in an examination setting. The external examination and its marking relate to syllabus standards by:

- providing clear links to syllabus outcomes
- enabling students to demonstrate the levels of achievement outlined in the course performance scale
- 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.

Board requirements for the HSC internal assessment mark

The Board requires that the assessment tasks used to determine the HSC internal assessment mark must comply with the components and weightings specified. The collection of information for the HSC internal assessment mark must not begin before the completion of the Preliminary course.

Schools are required to develop an HSC internal assessment program that:

- specifies the various assessment tasks and the weightings allocated to each task
- provides a schedule of the tasks designed for the whole course.

Note that school-based assessment marks submitted to the Board must NOT include:

- measures of objectives and outcomes that address values and attitudes. (However, as these objectives are important elements of any course, schools may decide to report on them separately to students and parents, perhaps using some form of descriptive statements.)
- measures that reflect student conduct.

See the Board's [ACE Manual](#) for further information.

Assessment components and weightings

Preliminary course

The suggested components and weightings for the Preliminary course are set out below.

Component	Weighting
Knowledge and understanding of the organisation and management of, and manufacturing processes and techniques used by, the focus area	40
Knowledge, skills and understanding in designing, managing, problem-solving, communicating and the safe use of manufacturing processes and techniques in the production of projects	60
	100

HSC course

The mandatory components and weightings for the HSC course are set out below. The internal assessment mark submitted to the Board of Studies is to be based on the HSC course only.

Component	Weighting
Knowledge and understanding of the organisation and management of, and manufacturing processes and techniques used by, the focus area	40
Knowledge, skills and understanding in designing, managing, problem-solving, communicating and the safe use of manufacturing processes and techniques through the design and production of a quality Major Project	60
	100

Teachers may use their discretion in determining the manner in which they allocate tasks within the course content. The Board considers that 3 to 5 assessment tasks is sufficient.

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, below.

Summary of external and internal HSC assessment

External examination	Mark	Internal assessment	Weighting
Written examination <i>Section I – Industry Related Manufacturing Technology</i> Objective response questions specific to each industry focus area	10	Knowledge and understanding of the organisation and management of, and manufacturing processes and techniques used by, the focus area	40
<i>Section II – Industry Related Manufacturing Technology</i> Short-answer questions specific to each industry focus area	15	Knowledge, skills and understanding in designing, managing, problem-solving, communicating and the safe use of manufacturing processes and techniques through the design and production of a quality Major Project	60
<i>Section III – Industry Study</i> Candidates answer one structured extended response question	15		
Major Project	60		100
	100		

Resources and advice

Further guidance and advice related to assessment and the HSC examination in Industrial Technology can be found on the Board's website at www.boardofstudies.nsw.edu.au/syllabus_hsc.

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 $1 \times \text{A3 page} = 2 \times \text{A4 pages}$ 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.

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 the Board of Studies *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.

Students will be required to certify that the Major Project is their own original work, and that any material drawn from other sources and any outside assistance is acknowledged. 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
- is the student's own 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 will be recognised in the marking 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 in 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

Components	Criteria	Marks
<p>Design, management and communication</p>	<p>Documentation of the Major Project from concept to completion, including:</p> <ul style="list-style-type: none"> • 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 OHS 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 	<p>20</p>
<p>Production</p>	<ul style="list-style-type: none"> • 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 	<p>40</p>
	<p>Total</p>	<p>60</p>