

ENGINEERING SKILLS CENTRE

Fitting & Machining

Toolmaking

CNC & CAM

Fluid Power

UNIVERSITY
INFORMATION
BOOKLET
2014
(v3)

Thank you for choosing the Engineering Skills Centre, Building "P" at Sydney Institute Ultimo for your training.

We offer a range of courses related to the Metals & Engineering Training Package for traditional apprenticeships, traineeships and can customised training to meet your specific needs. If required, we can include training from other Faculties within Sydney Institute and the wider TAFE system to offer training across all Training Packages.

Best regards,

Ian Frost
Head Teacher
Fitting & Machining
Engineering Skills Centre
Building "P"
Sydney Institute
Ultimo.

1. WORKSHOP LOCATION

The Engineering Skills Centre is located in Building "P" Sydney Institute, Ultimo between Thomas, Jones, Wattle & Mary Ann Streets. Metal Fabrication & Welding is in the same building.



Access is either via the large stainless steel entrance doors on Thomas Street between Wattle & Jones Street (pictured), or the glass entrance doors mid-way along the Jones Street Mall between Thomas & Mary Ann Streets.

The assembly point for the first-day enrolment & orientation session is the foyer inside the large stainless steel doors off Thomas Street.

2. FACEBOOK PAGE – "Fitting & Machining Ultimo TAFE"

If you would like to:-

- preview pictures of our workshops or our students working in those workshops
- access details of some of the Courses we offer
- access a range of other useful facts about us and TAFE in general, then:
 - o visit "Fitting & Machining Ultimo TAFE" on Facebook, or
 - Google "Fitting & Machining Ultimo TAFE".

3. SYDNEY TAFE COLLEGE MAP PHONE APP

Students can download a free Ultimo TAFE College map app for their mobile phone from Google Apps or Apple store.

To download the Android app from Google Apps, search "Sydney TAFE map", or download the app direct:-

https://play.google.com/store/apps/details?id=com.studentservices.sydneytafemap



4. COURSES

Ultimo TAFE offers a wide range of Courses using many workshops. Assembly points for the various sessions delivered in Building "P" and Building "N" are typically:-

Fitting & Hand Skills (i.e. MEASURE, TEMP, POWER, PROJECT sessions)

Building "P" Ground Floor Workshop PG08

Machining (i.e. TURN, MILL and PROJECT sessions)

Building "P" Lower Ground Floor Workshop PLG01

CNC & Advanced Machining (i.e. CNC sessions)

Building "P"
Lower Ground Floor
Computer room PLG48 & Workshop PLG01

Welding, Metal Fabrication, Blacksmithing (i.e. WELD, METAL FAB, FOB sessions)

Building "P" Ground Floor Room PG15

Fibre glassing (i.e. FIBRE sessions)

Building "N" Lower Ground Floor Workshop NLG13

5. PURCHASE OF PERSONAL PROTECTIVE EQUIPMENT (PPE) & ENTRY TO TAFE WORKSHOPS

For safety reasons, <u>all</u> students must wear industry approved safety clothing & footwear called *Personal Protective Equipment (PPE)* as a requirement of the Work Health & Safety Act (WH&S). The minimum Personal Protective Equipment (PPE) requirement includes:-

- a hair net or beret (if hair cannot be restrained)
- safety glasses conforming to Australian Standard AS1337.

Safety glasses must have lenses that are:-

- *clear* so vision is not hindered (coloured lenses designed for welding are no good as they make it too hard to see fine detail)
- strong & tough to prevent front entry of flying shrapnel / debris the greater the distance between the lense and the eye the better
- *rigid* to prevent vision distortion so workers can accurately judge where their hands are when working close to machinery.



- *side windows* to prevent side entry of materials without reducing side vision
- ventilation so the lenses do not fog when the face gets hot and sweaty.

From the 4 pairs of safety glasses pictured:-

- **BEST** <u>lower left</u> are the best design as they have tough, rigid Perspex or acrylic lenses which are strong to stop shrapnel impacts from the front, provide clarity and little or no visual distortion. The rigid side windows provide wrap-around side protection. The louvers allow air to circulate around the face to reduce risk of the lenses fogging. These would have the AS1337 logo on the inside of the arms as proof they conform to AS1337. They would cost between \$3 \$5
- Acceptable for fitting workshops only <u>top left</u> of picture are general purpose goggles designed to stop dust & small particles (such as smoke) getting in the eye. They would provide enough protection in a fitting workshop as they are enclosed to prevent side-entry of material and the lense is reasonably rigid and a long way from the eyes. They too would cost around \$3 \$5 in a hardware store. They are however prone to fog on hot days and are not suitable for machining workshops (TURN, MILL) or welding sessions (WELD)



- **NOT acceptable for fitting (TEMP, POWER) or machining (TURN, MILL)** <u>top right</u> are designed for oxy welding (hence the coloured lens). The opaque green sidewalls create tunnel vision which hinders side vision which is dangerous around machines, when walking around workshops, and when working close to other workers. They also get very hot and fog; they are only acceptable for use in welding workshops
- NOT acceptable for any engineering workshop <u>bottom right</u> are NOT eye protection for an engineering workshop. The lense is too soft to prevent impact penetration and would create distorted vision. The lense is very close to the face so will fog quickly.
- enclosed leather upper boots / shoes, with steel toe cap to Australian Standard AS
 2210 part 1 2010 (pictured right) have a solid leather upper (top) which:
 - o does not melt when hot (so is suitable when welding or machining)
 - does not allow sharp swarf or pointed objects to penetrate the top of the shoe or boot



o unsuitable footwear:-

"Roofer's Shoes" with woven uppers (pictured left) and "Gum Boots" with soft flexible uppers (pictured right) are designed for the building industry, NOT engineering workshops. Both have steel toe caps but the woven upper of the Roofer's Shoe and the soft flexible upper of the Gum Boot do not prevent piercing by sharp metal





shavings or pointed objects; their synthetic (plastic) upper melts if contacted by hot metal so neither are acceptable in engineering workshops

• long sleeved overalls, or long-legged drill trousers and long sleeved drill shirt i.e. "all cotton" work clothing designed for an engineering workplace that provides protection from burns from hot metal & welding rays when welding, and hot swarf when machining. The close fitting (but NOT tight) arms & legs reduces the risk of entanglement in revolving equipment





- o clothing and accessories that are NOT suitable for engineering workshop use include:
 - man-made fibres such as "Polyester" or "Rayon" because they melt or burn when hot
 - short legged pants as they do not protect legs from hot metal, swarf and welding rays
 - short sleeved shirts when welding as they do not protect arms from hot metal or welding rays
 - bib & brace overalls because they can become entangled in machines
 - laboratory coats (dust coats) because the:-
 - loose, open front flaps / tails can tangle in rotating machinery
 - wide button spacing allows them to snag / catch on protruding objects
 - knitted woollen jumpers, loose or poorly fitting clothing, stretch material (such as T-shirts, track suit jackets, Sloppy Joes, hooded jackets), gloves, or clothes with draw strings; all can entangle in rotating machinery. The risk of being pulled into a machine is increased when clothing is made from stretch fabrics
 - excessively tight clothing because it restricts free movement of arms, legs and the body
 - jewellery:-
 - rings should NOT be worn as they can catch on protrusions, or be crushed; titanium rings when crushed cannot easily be removed once an injured finger swells so are the most dangerous
 - bracelets, wrist watches and necklaces should NOT be worn in workshops as they may catch on machines and entangle in moving equipment.

The above is the minimum safety requirements for the following sessions / TAFE work areas:-

- Fitting / Hand Skills (MEASURE, TEMP, POWER, PROJECT sessions)
- Machining (TURN, MILL, PROJECT sessions)
- CNC / Advanced Machining (CNC sessions)
- Metal Fabrication (METAL FAB sessions)
- Foundry & Blacksmithing (FOB sessions)
- Fibre glassing (FIBRE sessions)
- Welding (WELD) workshops have the additional requirement of:
 - o long leather welding gauntlets (gloves)
 - oxy-welding goggles (for oxy-welding courses only)
 - arc welding shields; these need not be purchased as hand-held protective eye shields will be supplied for workshop use during arc-welding sessions
 - o clarification of welding PPE should be sought before attending Metal Fabrication & Welding sessions.

Personal Protective Equipment (PPE) must be brought to every TAFE session as you will be entering a TAFE workshop every day of attendance:-

- PPE items (such as safety glasses) are available for purchase at the TAFE United Campus Bookshop near the Security Gatehouse in Mary Ann Street *Monday to Friday 9:00am 5:00pm only*
- overalls & drill work clothing can be purchased from industrial clothing suppliers
- large hardware stores sell work clothing, safety footwear and safety glasses
- protective footwear can be purchased at industrial footwear suppliers and specialist footwear stores.

It is not permissible to share Personal Protective Equipment (PPE) under the guidelines of the Work Health & Safety (WH&S) Act due to risk of transfer of infections and skin diseases.

Personal Protective Equipment (PPE) should be purchased BEFORE the first day of attendance. Students should be wearing their PPE BEFORE entering any TAFE workshop.

There is no time during any session set aside for students to purchase PPE.

The on-site Ultimo TAFE student bookshop is not open evenings or weekends.

Students must sign the class attendance sheet on arrival in case of an emergency evacuation.

Students must arrive on time for each workshop session as each session will begin with a demonstration & discussion of relevant safety procedures to be followed during that session.

Students who miss the safety demonstration will NOT be allowed to sign-on or enter the workshop for their own safety and the safety of other students.

6. TAFE ENROLMENT

Students will be enrolled at TAFE at the start of the Course via *TAFE MEVI_COMM Enrolment*. TAFE provides the University a weekly session timetable for each Course; this timetable indicates class groups, dates, session names, room locations and on-line theory test dates as appropriate. This is posted on the University web-site before the Course commences at TAFE. If you do not know your TAFE group then you should check the University web site.

International students will need their Visa classification type / number, and the expiry date of their Visa.

When you enrol at TAFE you should use the same names as your University enrolment. When you enrol you will receive a TAFE user name, email account and password allowing you to access TAFE computers, course information and on-line tests on our Moodle site. You will use them during the *Enrolment & Orientation* session the first day of attendance to check (or alter) your enrolment details via *TAFE Student e-Services* and to register on the *SI Moodle*.

When you enrol you will be asked if you have previously enrolled in a NSW TAFE Course:-

- <u>if you have</u> enrolled in ANY NSW TAFE course at ANY NSW TAFE College at ANY time, then you are an *existing* TAFE student with an *existing* NSW TAFE student number. Your new course enrolment will be added to your existing TAFE record by linking it to your existing TAFE student number. If your personal details (e.g. address or contact telephone numbers) have changed since your last enrolment, you can update these details during enrolment or anytime afterwards via *TAFE Student e-Services* log-on
- <u>if you have never enrolled in a NSW TAFE course before</u>, you should enrol as a <u>new</u> TAFE student so that the TAFE Student Record system will issue you a TAFE student number
- after you enrol, TAFE Student Records system will notify you by email that your enrolment is accepted.

On your first day of attendance you must attend an enrolment & orientation session:-

- you cannot commence classes unless you have completed your TAFE enrolment
- attendance & assessment results cannot be entered until your TAFE enrolment has been processed and accepted by the TAFE Student Records system
- you <u>must</u> reply to the email sent to you to complete / confirm your enrolment and create your secret question for password re-setting if needed.

During the orientation session you will be informed of:-

- your WH&S rights, requirements & responsibilities
- your TAFE rights, requirements & responsibilities
- safe evacuation routes & procedures to be followed in the event of an emergency
- course content, assessment methods & requirements including registration on the *Sydney Institute Moodle* site for on-line theory tests if appropriate to your course
- class sign-on requirements at the commencement of each session
- other relevant course information
- answers to any relevant questions you may have regarding the course and assessment.

7. TAFE NSW SYDNEY INSTITUTE STUDENT GUIDE

During the orientation session you should be issued a **TAFE NSW Sydney Institute Student Guide** which outlines your rights & responsibilities at TAFE, useful course information, a description of the various services available to TAFE students after enrolment, useful contact numbers and the like.

8. SYDNEY INSTITUTE SI MOODLE WEBSITE

SI Moodle is the website used for posting relevant course information and on-line assessment. <u>http://sielearning.tafensw.edu.au/moodle/login/index.php</u> All students must register onto this web site as instructed in the Power Point Presentation shown during the TAFE orientation session. You must register using your *TAFE User Name* and *email address* assigned to you during TAFE enrolment; without these you will not be able to access on-line theory tests and course information when required.

Not all courses require on-line theory tests; check with your TAFE teacher what is required for your course. ALL on-line tests are run in TAFE room PLG48. Students are only eligible to attempt an on-line test once.

On-line tests are closed-book and fixed duration. An on screen timer indicates time remaining until "time—out" once the test is started. The system automatically saves your result if you are timed-out.

9. RIGHTS & RESPONCIBILITIES ASSOCIATED WITH A TAFE ENROLMENT

When you enrol you agree to abide by the regulations set down by TAFE NSW and declare that the information you have given is true and correct.

9.1. Student Rights

Students have a right to:-

- > be treated fairly and with respect by TAFE NSW staff and other students
- > learn in an environment free of discrimination and harassment
- > learn in a supportive and stimulating environment in which to pursue their goals
- > have access to counselling if desired or required
- privacy concerning TAFE NSW records that contain personal information, subject to statutory requirements
- be given information about assessment procedures at the beginning of the subject and progressive results as they occur

9.2. Student Responsibilities

Students have a responsibility to:-

- > use TAFE NSW and Sydney Institute's computing and communication facilities in a manner which is ethical, lawful effective and efficient
- treat other students and TAFE NSW staff with respect and fairness
- > follow any reasonable direction from a member of TAFE NSW staff
- > refrain from swearing, drinking and eating in classrooms and other learning areas
- > refrain from smoking in Institute buildings, walkways, stairwells, verandas, doorways and cafeteria areas in accordance with NSW Government Policy
- behave responsibly by not littering, harassing fellow students or staff, damaging, stealing, modifying or misusing TAFE NSW property, or being under the influence of alcohol or drugs
- > refrain from using mobile phones, pagers or other electronic devices that may disrupt classes
- do all assessment tasks and examinations honestly, and not engage in plagiarism, collusion or cheating
- submit all assessment tasks by the due date or ask for an extension of time if there are exceptional circumstances
- > return or renew library resources by the due date
- follow normal safety practices, by wearing approved clothing and protective equipment and following both written and verbal directions given by TAFE NSW staff

> not behave in a way that could offend, embarrass or threaten others.

Students behaving contrary to TAFE NSW regulations may be disciplined.

10. PENALTIES FOR BREACH OF DISCIPLINE

Breaches of discipline can occur when a student acts (either on or off TAFE NSW premises) in a way that either impairs the reasonable freedom of others to study, work or participate in TAFE NSW activities and/or prejudices the management of TAFE NSW Institute, Campus or Student Association activities.

A breach of discipline reported to a member of staff will incur penalties as listed in the TAFE NSW Regulations. These penalties can include exclusion from the campus for the remainder of the day and the student cautioned that a Breach Report will be submitted, and subsequently advised of the possible consequences and grounds for such a report. A designated officer will consider (within 21 days of the breach) if the student has a case to answer. Notice in writing will be delivered (either by prepaid post or served personally) to the student within 21 days of the breach detailing all relevant information along with a copy of the Regulations. The student has the right to make both oral and written submission if desired.

Penalties can be as follows:-

- ¬ a fine
- payment of compensation
- failure in an examination
- exclusion from use of specified facilities (for a period up to 12 months)
- > set conditions for future behaviour
- > suspension from classes (for a period up to 12 months)
- ∠ expulsion.

Temporary exclusion from classes or use of facilities

Any students misusing equipment or facilities can be banned from using that equipment up to 24 hours.

TAFE teachers have the right to exclude any student from class who breaches the accepted standards of behaviour. The circumstances of these incidents will be reported to a Manager Administrative Services or Assistant Director for appropriate action.

11. WORKPLACE HEALTH & SAFETY (WH&S) WORKSHOP SAFETY REQUIREMENTS

The Occupational Health & Safety Act (OH&S) was proclaimed in NSW in 1983 and has since been revised in 2000 and 2011. It is now the *Workplace Health & Safety Act (WH&S)*. The Act was designed to improve health, welfare & safety in the workplace. It has Sections or Parts which deal with the Employer's Responsibilities as well as Sections or Parts which deal with the Employee's Responsibilities. Under the terms of the Act, students (whether they be visiting students or not) are deemed to be Employees. The WH&S Act should be complied with because it is there to protect you and fellow course participants. There are monetary penalties up to \$100,000 (for organisations) and up to \$10,000 (for individuals), and provision for imprisonment, for serious breaches of the Act.

1) Compliance with the Act includes but is not limited to the wearing of appropriate industry related safety clothing and footwear called Personal Protective Equipment (PPE) including:-

- i) a hair net or beret (if hair cannot be restrained)
- ii) safety glasses conforming to AS 1337
- iii) enclosed leather boots/ shoes, with steel toe cap conforming to AS 2210 part 1 2010
- iv) long sleeved overalls or drill trousers with drill long sleeved shirt i.e. "all cotton" clothing
- v) long leather gloves (welding courses only)
- vi) welding goggles (welding courses only).

These items must be brought to all classes and worn as directed, at all times.

- 2) During Course attendance students must comply with all safety instructions.
- 3) WH&S and TAFE regulations prevent students from smoking or consuming food or drink while in classrooms or workshop areas; consumption of alcohol prior to class attendance is prohibited.
- 4) Loose fitting clothing such as pullovers or cardigans pose a serious safety hazard in workshops so is not allowed. Non-industrial rated clothing must be covered by the safety clothing.
- 5) Long hair must be contained in a net or cotton beret.
- 6) Safety glasses must be worn at all times beyond the workshop entry door.
- 7) Protective footwear with enclosed leather upper and steel toe cap must be worn at all times beyond the workshop entry door; shoes with soft uppers or woven uppers are not permitted.

Any student who does not comply with these or other safety instructions will be excluded from the workshop or class room for their own safety. The incident and any time lost will be recorded in the class record and reported to the University.

12. COURSE CONTENT & ASSESSMENT

Depending on your course of study, while at TAFE you may be enrolled in up to 4 **Units of Competence**. Your lecturer and/or TAFE teacher can advise which Units of Competence are relevant to your course:-

- MEM18001C "Use Hand Tools"
- MEM18002B "Use Power Tools / Hand Held Operations"
- MEM07032B "Use Workshop Machines For Basic Operations"
- MEM05013C "Perform Manual Production Welding".

Your TAFE sessions may also include additional "enrichment" demonstrations and tasks as requested by the University to compliment your University studies.

12.1. Results & Attendance Records

At the end of the Course, TAFE will issue 2 results:-

- a TAFE result for each Unit of Competence you were enrolled in; this is reported on a TAFE *Transcript of Academic Record* mailed to the home address on your TAFE enrolment
- a weighted mark for each skill area studied at TAFE. This is reported to the University for inclusion in your University subject result; *TAFE session attendance is also reported to the University*.

The *TAFE weekly session timetable* indicates the skills you will be studying while at TAFE (see below). It is posted on the University web site, the SI Moodle, and the TAFE noticeboard in the Fitting assembly area near the Thomas Street stainless steel entry doors at Ultimo TAFE.

MEM18001C "Use Hand Tools"

MEASURE

- use of steel rule and calipers
- use of vernier caliper to measure to 0.02mm
- o use of micrometers to measure to 0.01mm
- thread measurement and identification
- form measurement (angles and radii)

TEMP 1

- o datum edges, datum centre lines, marking out
- o tolerance, chain dimensioning / accumulated tolerance
- drawing conventions

TEMP 2

- order of operations
- drilling
- hacksawing
- filing to size / drawing specification
- threading
- assembly techniques

Assessment

Students must attempt all practical tasks for the sessions shown on the TAFE weekly session timetable; practical tasks are assessed for conformance to drawing specification.

When an on-line test IS NOT required, practical tasks = 100% of the final TAFE mark.

A percentage mark and your attendance are reported to the University.

When an on-line knowledge test is required by the University in addition to the practical assessment, the on-line test date/s are specified on SI Moodle and the TAFE weekly session timetable.

When an on-line test IS required in addition to the practical assessment, then practical tasks = 85% of the final TAFE mark; on-line theory test = 15% of the final TAFE mark.

A percentage mark and your attendance are reported to the University.

MEM07032B "Use Workshop Machines for Basic Operations"

• TURN 1

- machine safety
- machine set-up
- rough & finish turning shaft to drawing specification using HSS tools
- drawing layout, datums, accumulating tolerance, order of operations
- TURN 2 (2 TURN session programs)
 - boring, or
 - taper turning and threading

TURN 3 (3 TURN session programs only)

boring

MILL

- machine set-up
- blocking to size
- drilling
- slot milling

Assessment

Students must attempt all practical tasks for the sessions shown on the TAFE weekly session timetable; practical tasks are assessed for conformance to drawing specification.

When an on-line test IS NOT required, practical tasks = 100% of the final TAFE mark.

A percentage mark and your attendance are reported to the University.

When an on-line knowledge test is required by the University in addition to the practical assessment, the on-line test date/s are specified on SI Moodle and the TAFE weekly session timetable.

When an on-line test IS required in addition to the practical assessment, then practical tasks = 85% of the final TAFE mark; on-line theory test = 15% of the final TAFE mark.

A percentage mark and your attendance are reported to the University.

MEM18002B "Use Power Tools / Hand Held Operations"

POWER 1

- Pneumatics & pneumatic tools
- Guillotine & bender
- Screw thread assembly

POWER 2

- Portable drilling machines
- Jigsaws, cold saw and band saw
- Hand cutting tools
- Off-hand grinder
- Angle grinder

Assessment

Students must attempt all practical tasks for the sessions shown on the TAFE weekly session timetable; practical tasks are assessed for conformance to drawing specification.

When an on-line test IS NOT required, practical tasks = 100% of the final TAFE mark.

A percentage mark and your attendance are reported to the University.

When an on-line knowledge test is required by the University in addition to the practical assessment, the on-line test date/s are specified on SI Moodle and the TAFE weekly session timetable.

When an on-line test IS required in addition to the practical assessment, then practical tasks = 70% of the final TAFE mark; on-line theory test = 30% of the final TAFE mark.

A percentage mark and your attendance are reported to the University.

MEM05013C "Perform Manual Production Welding"

WELD

- gas metal arc welding
- manual metal arc welding

Assessment

Students must attend all demonstrations and attempt all hands-on tasks for the sessions shown on the TAFE weekly session timetable. Practical tasks are assessed against welding best work practice.

Practical tasks = 100% of the final TAFE mark.

A percentage mark and your attendance are reported to the University.

13. ENRICHMENT SESSIONS

These sessions are not enrolled as part of a Unit of Competency, rather they are used to demonstrate specific skills relevant to your University studies, and often include "hands-on" tasks for you to attempt specific industrial skills under supervision:-

CNC

This session is used to demonstrate processes such as:-

- Computer Numerical Machining (CNC)
- Computer Aided Machining (CAM)
- CNC Ram Electrical Discharge Machining (CNC Ram EDM)
- Wire cut EDM
- Plastic injection moulding.

Your session attendance and participation are reported to the University.

METAL FAB

Students undertake sheet metal fabrication demonstrations and assessed practical tasks.

The practical mark is incorporated into the WELD percentage mark reported to the University; your session attendance and participation are also reported to the University.

FOB

Students undertake blacksmithing demonstrations and assessed practical tasks.

The practical mark is incorporated into the WELD percentage mark reported to the University; your session attendance and participation are also reported to the University.

FIBRE

Students undertake fibre glassing demonstration and practical task.

Your session attendance and participation are also reported to the University.

PROJECT

Students use TAFE workshops and machines under TAFE supervision, to manufacture a project designed as part of their University studies.

The project is assessed by the University; your attendance & level of participation are reported to the University.

Ian Frost

Head Teacher, Fitting & Machining, Ultimo TAFE

LOCATION MAP

ULTIMO COLLEGE

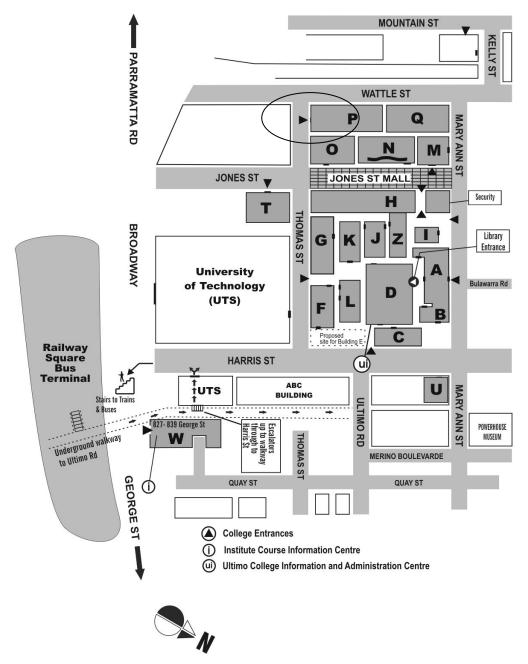


SYDNEY INSTITUTE

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> **Engineering Skills Centre assembly** point is the ground floor Building "P" entrance at the large stainless steel doors on Thomas Street, Ultimo



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Institute Information Centre, Railway Square (827-839 George St) Phone 1300 360 601