Associate Degree in Electronic Engineering

Higher Education Student Handbook

February 2012
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Introduction

Welcome to TAFE SA Higher Education.

In addition to a wide range of vocational education and training (VET) qualifications, TAFE SA also offers a limited number of higher education qualifications that provide high level knowledge and academic skills to meet industry needs.

TAFE SA higher education qualifications are accredited by the Government Accreditation Authority and meet the same Australian Qualification Framework guidelines that are applied to university qualifications.

TAFE SA higher education qualifications are developed in conjunction with industry and are offered in a supportive environment to assist you in acquiring:

- a high-order body of knowledge
- the academic skills and attributes necessary to conduct research and evaluate new information and concepts from a range of sources
- the ability to review, consolidate, extend and apply knowledge in a professional context
- a solid foundation for self-directed and life-long learning

TAFE SA currently offers the following higher education qualifications:

- Associate Degree in Electronic Engineering
- Bachelor of Business (Hospitality Management), (Sport and Event Management) and (Tourism and Event Management)
- Bachelor of Dance Performance
- Bachelor of Visual Arts and Design

Higher Education Information.

The first part of this Handbook will provide you with an overview of the Academic and Administrative Policies that apply to all TAFE SA higher education qualifications.

In some cases a link to the complete TAFE SA policy and/or further information is included for you to investigate at your leisure.


Your TAFE SA lecturer will provide information about the application of these policies to the particular qualification you are undertaking.

Faculty specific information related to the particular higher education qualification in which you are enrolled is also supplied, to provide information about:

- The TAFE SA staff who will facilitate the delivery of your qualification
- The campus where you will be studying
- The structure of the qualification you are undertaking
- Key semester and assessment dates
- Accessing resources and equipment for study purposes
- Any specific Occupational Health and Safety and dress requirements that relate to your qualification.
Academic Policies

Learning in a higher education environment

Higher education qualifications require you to take control of, and have responsibility for, your own learning. The expectation is that you will take every opportunity to expand your knowledge. Part of your taking control involves recognising your own learning strengths and weaknesses as you explore your own capabilities. TAFE SA will provide a supportive environment to assist you in attaining the knowledge, skills, and the application of these to your chosen discipline. The responsibility for learning is yours.

In addition to your lectures, tutorials and/or practical sessions you will need to devote a significant amount of time to personal study to enable you to participate meaningfully in classes, complete assignments, prepare for assessments and ultimately to be successful.

A full-time student should expect to commit approximately 33 hours per week to their study during a semester – this includes all structured learning, personal study and assessment activities.

On-line study

If you are studying on-line from an off campus/external location, or if you are accessing an on-line program from a campus you will need to dedicate a set amount of time to this formal input in much the same way as you would set time aside for lecture and tutorial attendance.

Studying on-line requires you to be even more self-directed than on campus higher education students. Discussion forums and other interactive on-line activities will assist your learning; however, you are encouraged to keep in regular contact with your lecturer.

On line students need to commit the same amount of time to their studies as students attending classes on campus.

Graduate Employability Skills

In addition to the discipline specific knowledge and skills you will acquire through your studies, you will be provided with the opportunity to develop Graduate Employability Skills to assist you either in employment or further study after you graduate.

Graduate Employability Skills include communication, teamwork, problem solving, initiative and enterprise, planning and organising, self-management, learning, and technology.

Study Counselling & Intervention

TAFESA places a high priority on providing timely and constructive feedback to students to facilitate their learning.

Formative assessment provides students with on-going feedback as part of their learning. Summative assessment determines whether a student has successfully accomplished a component of study.

Students experiencing difficulty in meeting course requirements may be invited to participate in a ‘Review of Progress for Students at Risk’. This review can be initiated by either the lecturer or the student.
For international students studying on a student VISA there are strict regulations regarding academic progress which may impact on eligibility to continue studying. For further information refer to the Policies and Responsibilities section of the TAFE SA International website at: http://www.tafesa.edu.au/international/apply-international-student/int-policies-responsibilities.aspx or discuss requirements with your lecturer or the International Student Office.

All students are encouraged to request a ‘Review of Progress’ if they are experiencing difficulty in meeting course requirements; timely intervention may make all the difference to a final grade.

Assessment

The following information provides an overview of key requirements.

Due Dates
Students will be informed of due dates for assessments at the beginning of each component of study. It is the students’ responsibility to submit required material or attend and participate in scheduled assessments and/or exams.

Extensions
If a student is unable to meet a due date, a request for an extension may be made. Any such request must be received and granted by the lecturer concerned before the published due date.

An extension may be granted where a due date disadvantages a student in a significant way. Such circumstances include compassionate grounds, sickness supported by a doctor’s certificate and employment obligations supported by the employer. A lecturer can request to see evidence of progress towards the assessment activity before the granting of any extension.

Re-submissions
Resubmission is the submission of an assessment piece after a student has revised it, or more intensive participation in an assessment event, because the original did not demonstrate that the assessment requirements were met.

Formal resubmission processes apply only to summative assessment.

Students have a right to one resubmission per assessment piece/event if the pass criterion for an assessment has not been met.

Further resubmissions may be permitted by the lecturer on a case-by-case basis. This is usually due to special circumstances, where a student is able to provide justification for their request; such circumstances include, but are not limited to: compassionate grounds, sickness supported by a doctor’s certificate, employment obligations supported by the employer.

The only grade available on a resubmission is a Pass Level 2. If the component of study is not graded then a resubmission will not affect the result code.
In all cases the due date for re-submission and remarking will be decided by the lecturer in negotiation with the student and will be based on reasonable time frames with due consideration for the workloads of all concerned.

**Deferred assessments**
Deferred assessments are assessments provided at an alternative time.

Deferred assessments may be granted where the student has otherwise met course requirements but is unexpectedly unable to participate in an assessment. This is usually due to special circumstances where a student is able to provide justification for their request. Such circumstances include, but are not limited to: compassionate grounds, sickness supported by a doctor’s certificate, employment obligations supported by the employer.

The usual grading regime which is applied to the component of study is applied to a deferred assessment.

**Grading**
The following result grades are awarded for higher education qualifications:

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<tr>
<th>Grade</th>
<th>Description</th>
<th>Grade Points</th>
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<tbody>
<tr>
<td>HD</td>
<td>High Distinction 85-100% Outstanding or exceptional work in terms of understanding, interpretation, presentation and originality</td>
<td>7</td>
</tr>
<tr>
<td>DN</td>
<td>Distinction 75-84% A very high level of work which demonstrates a high level of understanding, interpretation, presentation and originality</td>
<td>6</td>
</tr>
<tr>
<td>CR</td>
<td>Credit 65-74% A high level of work which demonstrates a good level of understanding, interpretation, presentation and originality</td>
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<tr>
<td>1P</td>
<td>Pass level 1 55-64% An adequate level of work which demonstrates some level of understanding, interpretation, presentation and originality</td>
<td>4.5</td>
</tr>
<tr>
<td>2P</td>
<td>Pass level 2 50-54% Satisfies minimum requirements</td>
<td>4</td>
</tr>
<tr>
<td>PA</td>
<td>Pass achieved: non-graded Grade awarded when subject is assessed on a pass/fail basis only, and scores are not assigned. The grade may encompass any level of achievement from satisfactory to outstanding. No grade point is assigned and a PA grade is not included in the calculation of Grade Point Averages; GPAs.</td>
<td></td>
</tr>
<tr>
<td>1F</td>
<td>Fail level 1 45-49% Fails to meet minimum requirements</td>
<td>1.5</td>
</tr>
<tr>
<td>2F</td>
<td>Fail level 2 0-44% Unsatisfactory attainment on a number of learning outcomes</td>
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</table>

Specific information regarding indicative standards required for each grade in relation to your qualification will be provided by your lecturers.
Appealing against assessment processes and decisions
TAFE SA recognises the right of students to lodge an academic appeal related to student progress and assessment.

There are three stages through which the appeal may progress. Each stage of the process is free of charge.

In the first instance students should discuss their complaint with the lecturer involved to resolve the disputed matter. The lecturer will endeavour to make a decision regarding the matter and inform the student of the outcome as soon as possible, but always within one week.

If unsatisfied with the response or time taken to resolve the matter a student may lodge an appeal, in writing, to the Educational Manager outlining the nature of the disputed matter. The student will be advised of the outcome review in a reasonable timeframe, usually no longer than two weeks from receipt of the written complaint.

If not satisfied with the decision of the Educational Manager the complainant may request that the matter is dealt with through an independent dispute resolution process external to the program. The student may refer their appeal to the Training Advocate.

The Office of the Training Advocate provides a free and independent mechanism for the resolution of grievances for domestic and overseas students.

The Training Advocate can be contacted via:
Phone: 1800 006 488 (freecall)
Email: trainingadvocate@sa.gov.au
Web: www.trainingadvocate.sa.gov.au
Postal Address: GPO Box 320 ADELAIDE SA 5001
Street Address: Ground Floor, 55 Currie St., ADELAIDE SA 5000

Assessment Quality Assurance Processes
To check and continuously improve on the quality of assessment practices and outcomes TAFE SA undertakes a quality assurance process which includes systematically moderating, validating and benchmarking all higher education subjects.

Moderation
Moderation is an academic quality control process. It involves bringing assessment judgements and standards into alignment. It is a process that ensures the same standards are applied to all assessment results within the same subject.

Validation
Validation is an academic quality review process. It involves checking that the assessment tool and process produce valid, reliable, sufficient, current and authentic evidence to enable reasonable judgements to be made about whether the learning outcomes have been met. It includes reviewing and making recommendations for future improvements to the assessment tool, process and/or outcomes.

Benchmarking
Benchmarking is an academic quality review process which involves TAFE SA working with a university to formally review the standard of final year students’ work. The purpose is to ensure that TAFE SA higher education standards are comparable to university standards.

Regardless of the nature of the professional feedback the benchmarking process does not alter a TAFE SA student’s grades. Your work may be required towards the end of a semester to be part of a ‘benchmarking’ process. Please keep all marked assignments until
the beginning of the following semester so that it can be easily accessed if required. If your work is used in a benchmarking process any identifying information will be screened out.

**Merit List**

TAFE SA higher education students, who meet the following criteria, are eligible to receive a TAFE SA Higher Education Principal Officer’s Letter of Commendation and an Academic Record notation:

- Achieve a Grade Point Average (GPA) of 6.25 or higher (on a scale of 7) across all subjects in their final full time year (or part time equivalent) of study in a TAFE SA higher education qualification. The following results do not attract grade points and are not included in GPA calculations:
  - Pass achieved: non-graded (PA)
  - Results that are awarded under a formal credit transfer arrangement or through an RPL assessment
- Pass all subjects in their final full time year (or part time equivalent) of study in a TAFE SA higher education qualification without recording a fail grade.

**Credit Transfer and Recognition of Prior Learning (RPL)**

If students believe they have already met the learning outcomes of a particular subject they may apply to have their previous learning recognised through an RPL process.

Specific information regarding RPL in relation to your qualification will be provided by your lecturers.

**Academic Integrity (Referencing and Plagiarism)**

Higher education academic qualifications carry the implication that successful students are able to demonstrate original thought and clear written expression. It is assumed, therefore, that submitted assessment work is the student’s own.

The conventional evidence of this is that all incorporated ideas, statements and information from other sources are fully acknowledged.

This is done by using a recognised Referencing System (usually the Harvard System or the Chicago Style Manual). All information, ideas, opinions, theories etc. of others’ work must carry full citation details in your assignments. An important aspect of referencing is that it must be consistent with one or the other of the recognised methods or any other recommended by your lecturers.

Please be aware that failure to supply full acknowledgements may leave you open to charges of plagiarism. If proven, severe penalties may ensue.

TAFE SA will not tolerate cheating (including plagiarism). It is cheating to:

It is cheating to:

- use notes or other resources without permission during formal testing
- hand in someone else’s work as your own (with or without that person’s permission)
- hand in a completely duplicated assignment
- take work without the author’s knowledge
- allow someone else to hand up your work as their own
- have several people write one computer program or exercise and hand up multiple copies, all represented (implicitly or explicitly) as individual work
- use any part of someone else’s work without the proper acknowledgement
Plagiarism could result in one or all of the following penalties:

- the piece of work is not assessed (given a grade of 0%)
- Fail result is given for the unit.


**Note:** No programmable calculators are to be used during assessment activities as they may contain pre-programmed information relevant to the test/exam. In such a case, if the student is found to have information stored in the calculator, they will be treated as copying/cheating in a test/exam and will be penalised as outlined previously. Also mobile phones, iPods, etc should not be used during assessment activities.

If there is evidence to support a suspicion of student cheating the lecturer concerned will notify the Educational Manager and set out in writing the concerns to the student and arrange a time to discuss the matter. Once this has taken place one of the following will occur:

- If it is a minor or unintentional offence the student will be offered an alternative form of assessment in order to prove competence in the course component. The grade will be the lowest level of Pass for the subject if the new test result is adequate.
- If the offence is serious or deliberate the student will fail the assessment.

In each case the misconduct will be recorded in the student's file.

**Intellectual Property**

Intellectual property is related to Plagiarism, cheating and the broader issue of Copyright. Plagiarism and cheating have been dealt with in the section above but you should be aware that any writing, illustration, piece of music, diagram, photographic and multi-media images created wholly and solely by yourself attract copyright status under YOUR name.

TAFE SA policy indicates that students must abide by the provisions of the Copyright Act (1968) and subsequent additions and amendments. Digital copyright is particularly important. You must not use TAFE SA equipment and facilities to infringe copyright by copying or communicating copyright information either in print or digitally, except for reasonable portions required for your research and study. For these purposes, you are normally allowed to copy 10% or one chapter of a book, or one article per issue of a journal.

Refer to the Australia Copyright Council for detailed and helpful information covering all types of intellectual and artistic creations.


**Student and Graduate Feedback**

TAFE SA considers that student and graduate feedback is critical to ensuring the ongoing improvement of its teaching and services.

Three strategies are utilised to collect student and graduate feedback about TAFE SA higher education qualifications:
1. The Australasian Survey of Student Engagement (AUSSE) which is conducted annually. This is a national ‘whole-of-qualification’ student engagement survey managed by the Australian Council of Educational Research (ACER).

2. Local subject and lecturer focussed surveys for current students are conducted towards the end of each semester. A rolling schedule of subjects for survey is developed by each Faculty Board.

3. Graduate surveys are usually aligned with graduation ceremonies.

Outcomes from, and actions taken as a result of, surveys are monitored by the TAFE SA Higher Education Academic Board.
Administrative Policies

Fees and Payments

Refunds

Campus-initiated refunds
Where a refund results from a circumstance caused by the campus, such as a cancelled class, you will receive a full refund of the fees. No administration fee will apply.

Acceptance of place in a higher preference course offered through SATAC
If you provide a copy of your letter of offer, a full refund will be given. No administration fee will apply.

Student-initiated refunds

Refunds will not be granted automatically. You are expected to be aware of your work and personal commitments before you enrol, and will need to demonstrate that the cause of withdrawal could not be reasonably anticipated before you enrolled.

A full refund (less administration fee) will be given if you:

- withdraw before the course starts, or
- produce a document that supports your successful application for status in part sof a course, where the full fees have been paid. This will only apply within three weeks of the start of the course. After that time, all other elements of the refund policy apply if you withdraw as a result of being awarded status.

A 50% refund (less administration fee) will be given if you withdraw for reasons of personal circumstances beyond your control, after the course has started, but before you have completed 20% of the course.

Acceptable reasons may include:

- sickness (verified by a medical certificate)
- change of employment hours or location (verified by employer)
- other valid reason at the discretion of the delegate, or
- as a result of a successful RPL application, received within three weeks of the date of the start of any units in which you have enrolled.

All details regarding the TAFESA Refund Policy can be found at http://www.tafesa.edu.au/apply-enrol/fees-payments/refund-policy.
Student Conduct & Responsibility

TAFE SA is committed to providing students with a safe, supportive and intellectually challenging study environment. Students enrolled in TAFE SA will share classes and facilities with staff and other students. It is expected that students will behave in a manner that is acceptable to the wider community.


TAFE SA values:
- difference and diversity
- respect and cooperation
- tolerance
- academic debate
- freedom of expression balanced with social responsibility

TAFE SA expects its students to:
- treat other students and staff with respect so as not to compromise their health, safety, privacy and welfare,
- contribute to the orderly, effective and safe functioning of TAFE SA,
- follow the Occupational Health, Safety and Welfare policies and procedures,
- comply with all lawful directions given by staff while on TAFE SA property or engaged in a TAFE SA controlled or sponsored activity,
- comply with TAFE SA commitment to the prevention and elimination of unlawful discrimination,
- abstain from bullying, harassment, and any other unlawful activity or behaviour whilst on TAFE SA property or when engaged in a TAFE SA controlled or sponsored activity,
- abstain from acts of self-harm,
- access only that TAFE SA property to which they are entitled to have access and are qualified to use and to use it in a careful and responsible way,
- adhere to program requirements and class norms,
- ensure that information held by TAFE SA or other students is not accessed, used or published inappropriately

Access and Equity

TAFESA is proactive in supporting fair educational opportunities by ensuring that all students have the opportunity to achieve according to their individual potential. TAFESA is committed to promoting, encouraging and valuing equity and diversity in regard to its staff and students.


TAFESA requests that students declare if they are in need of specific assistance with regard to language, literacy and numeracy so that specific learning support may be provided.

The Occupational Health, Safety and Welfare Act 1986 also requires that all employees and students be provided with a safe and healthy working and learning environment free from discrimination and/or harassment.

IT Network/Email
Students at TAFE SA must use information technology (IT) resources in an efficient, responsible and accountable manner. The technology must be used only for study-related purposes, and not for private business, non-course related or political purposes. You may download materials from the Internet within reason, and in accordance with copyright regulations. The amount you can download will depend on the needs of your educational program.

You must not transmit, retrieve, store or display any topics or forums that deal with:
- sexually explicit material
- hate speeches
- offensive material
- material regarding illicit drugs or violence
- material regarding criminal skills and/or illegal activity
- material of a defamatory, discriminatory or harassing nature

At no time are you permitted to:
- attempt unauthorised access to resources, such as hacking
- mass email non-educational messages to groups or individuals
- use equipment in any way that would reflect unfavourably on TAFE SA

All IT and internet use will be monitored by staff and management and action will be taken against any student who uses IT resources inappropriately.

The use of electronic mail (email) is now a formal and standard mode of communication. Email should not be used for personal or commercial purposes unless authorised.

At all times students must be mindful that although information is to be treated as private and confidential on an electronic messaging system, and the rights of the individual must be respected, the reality is that mail can be tracked on a network and retrieved as required.

It is recommended that the following be included as part of a user’s signature:
“This correspondence is for the named person’s use only. It may contain confidential or legally privileged information or both. No confidentiality or privilege is waived or lost by any error in transmission. If you received this correspondence in error please immediately delete it from your system and notify the sender. You must not disclose or copy any part of this correspondence if you are not the intended recipient.”


Health and Safety
For the health and comfort of all students and staff you are asked to maintain an acceptable standard of personal hygiene and use all facilities provided appropriately.
- All rubbish should be placed in bins.
- Classrooms and workshops should be left in a clean and orderly state.
- If you are a smoker, please ensure you are smoking in a designated area and you dispose of your cigarette butts in the appropriate bins/containers.
• You may not consume food and drink in classrooms or workshops unless specifically authorised by staff.
• You are expected to remove contaminated workshop overalls or boots before using public spaces (hand washing stations are provided in workshop areas and showering facilities are generally available on campus)
• Student areas in cafeterias should be kept clean, particularly the communal fridges and microwave ovens

If you witness a medical emergency or an accident involving injury, you must report it immediately to TAFE SA staff so that first aid can be arranged without delay and any hazards can be eliminated.

Where possible, please follow the procedure outlined below:
1. Provide comfort and assistance to the patient
2. Send someone to notify a first aider or staff member from the campus Client Service Centre. Alternatively, dial 1333 on any office telephone which will connect you to a first aid officer, or use a campus corridor telephone to connect to a first aid officer; dial 1 for access
3. Stay with the patient until medical assistance arrives

If you are unable to follow this procedure for any reason, you can call an ambulance yourself. To do this from any office telephone, dial 0, listen for the dial tone, and then dial 000. From a pay telephone dial 000 (free call).

It is your responsibility to report any hazards you see that may cause injury or damage. Please report these hazards to lecturers or other staff as soon as possible.

Smoking is prohibited in all TAFE SA buildings, including canteens and entrances. Smoking is allowed in designated areas clearly marked with 'Smoking Area' signs.

TAFE SA has a responsibility under the Occupational Health, Safety and Welfare Act, 1986, to create and maintain a safe and healthy environment for all employees, students and visitors. While engaged in TAFE SA activities, you should not be adversely affected by alcohol and other drugs, and should observe local, state and federal laws in relation to using, possessing, giving or selling alcohol and other drugs.

You can find out more information about health and safety requirements on the TAFE SA website at: http://www.tafesa.edu.au/apply-enrol/student-policies/safety.

Qualification Parchment

Once you have completed the requirements for your higher education qualification you will be eligible to receive an official TAFE SA Qualification Parchment.


Your award will be conferred only when your academic records show that you have met all the requirements for the award and have paid all the fees. Formal graduation ceremonies are organised for the presentation of higher education Qualification Parchments.

Associate Degree in Electronics

Staff

Lecturers

<table>
<thead>
<tr>
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<th>Name</th>
<th>Ext (8348)</th>
<th>Room</th>
<th>Email</th>
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Administration

- Room: F110 (GC 1 Corridor)
- Email: electronics@tafesa.edu.au
- Leah Gonis: Ph: 8348 4328
- Kirsty Emeribe: Ph: 8348 1936
- Anita Markijevic: Ph: 8348 4246

Course Coordinators, Principal Lecturer and Management

Educational Manager

Greg Bassani, Room: F110, Ph: 8348 4267
greg.bassani@tafesa.edu.au

Principal Lecturer

Alan Manley, Room: G58, Ph: 8348 4609
alan.manley@tafesa.edu.au

Course Coordinator

Antoaneta Barbulescu, Room: G58, Ph: 8348 4528
antoaneta.barbulescu@tafesa.edu.au
Structure of the Qualification

Course Outcomes
The Associate Degree in Electronic Engineering is a specialist qualification in a single discipline of engineering.

Recently, the electronics industry in South Australia has identified that there is a need for para-professionals with a mix of skills that can better support a growing sector of the industry made of Defence-based and high IP-product companies. These para-professionals need to be able to work with engineers and researchers to develop and integrate complex electronic systems. They need to have strong analytical skills and solid hands-on skills to be utilised for the testing, modification, design and integration of hardware and software in complex electronics systems.

These industries have also indicated a need for the graduates of such a qualification to be more easily upgraded to a professional qualification.

The Associate Degree in Electronic Engineering has been designed to respond to these needs. It will:

- Focus on the foundational technical knowledge of the discipline of Electronic Engineering, including the underpinning basic Science and enabling Mathematics;
- Support the acquisition and understanding of these foundational principles and the development of practical competencies through extensive exposure to hands-on experimentation, design, measurement, test and fault-finding activities;
- Support the development of oral and written communication, project and financial management competencies through practical project work and specific units of study;
- Develop independent learning skills and understanding of the necessity to undertake life-long self-directed learning in a technical discipline in which technologies evolve very rapidly.

In so doing, it directly supports the characteristic outcomes of an Associate Degree:

- “acquisition of the foundational underpinnings of one or more disciplines, including understanding and interpretation of key concepts and theories and how they are evolving within the relevant scientific, technical, social and cultural contexts”
- “development of the academic skills and attributes necessary to access, comprehend and evaluate information from a range of sources”
- “development of generic employment-related skills relevant to a range of employment contexts”
- “a capacity for self-directed and lifelong learning.”

The Associate Degree in Electronic Engineering will underpin the acquisition of practically focused competencies with more extensive foundational studies, particularly in mathematics and computer science. Throughout the course, linkages between theory and practical outcomes will be emphasised with the objective of exposing the close relationship between the processes of analysis and design in electronic circuits and systems.

Recognition given to the Qualification
The qualification is being developed in consultation with the Electronics Industry Association (EIA) and the University of Adelaide. The Higher Education representative/s have assisted to ensure robust Higher Education Australian Qualification Framework (AQF) requirements are appropriately and adequately addressed.

---

### Course Subjects

The following subjects represent the whole of the curriculum for the Associate Degree.

#### Level 1

<table>
<thead>
<tr>
<th>Course Unit</th>
<th>Hours</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics Practice 1</td>
<td>160</td>
<td>Semester 1</td>
</tr>
<tr>
<td>Basic Electronic Circuits</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>Electronics Mathematics 1</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Electronics Mathematics 2</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Digital Electronics</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Analogue Electronics 1</td>
<td>180</td>
<td>Semester 2</td>
</tr>
<tr>
<td>Filters and Oscillators</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Microcontroller-based systems</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Communications Systems</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Computer Science 1</td>
<td>120</td>
<td></td>
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</tbody>
</table>

#### Level 2

<table>
<thead>
<tr>
<th>Course Unit</th>
<th>Hours</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics Practice 2</td>
<td>100</td>
<td>Semester 1</td>
</tr>
<tr>
<td>Electronics Mathematics 3</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Complex Power Supplies</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Circuit Analysis</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Analogue Electronics 2</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>Computer Science 2</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Analogue Electronics 3</td>
<td>100</td>
<td>Semester 2</td>
</tr>
<tr>
<td>Advanced Digital Systems</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Computer Science 3</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Digital Signal Processing</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Project Management</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Engineering Project</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Engineering Science</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>40</td>
<td></td>
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</tbody>
</table>

*Elective must be of an equivalent or higher Australian Qualification Framework (AQF) level and be of 40 hours (2 units) duration.

See Appendix A for more details on the course units.

### Entry Requirements

Learners will be expected to have successfully completed one of the following pre-requisites prior to entry into the qualification:

- satisfactory completion of Year 12 and Year 12 Mathematics
- any Certificate III related to Engineering

International applicants are also required to provide evidence of proficiency in English to IELTS level 6.0 (or equivalent).

Applicants may also be required to undertake an assessment and/or a bridging course which would ensure they were not disadvantaged against other learners.
# Associate Degree in Electronics – proposed Study Plan

(subject to change)

## Year 1, Semester 1

<table>
<thead>
<tr>
<th>Course Unit</th>
<th>Hours</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics Practice 1</td>
<td>160</td>
<td>Sem 1</td>
</tr>
<tr>
<td>Basic Electronic Circuits</td>
<td>180</td>
<td>Sem 1</td>
</tr>
<tr>
<td>Electronics Mathematics 1</td>
<td>100</td>
<td>Sem 1</td>
</tr>
<tr>
<td>Microcontroller-based systems - 1</td>
<td>40</td>
<td>Term 1</td>
</tr>
<tr>
<td>Digital Electronics</td>
<td>100</td>
<td>Term 2</td>
</tr>
<tr>
<td><strong>TOTAL HRS</strong></td>
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## Year 2, Semester 2

<table>
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<tr>
<th>Course Unit</th>
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</thead>
<tbody>
<tr>
<td>Analogue Electronics 1</td>
<td>180</td>
<td>Sem 2</td>
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<tr>
<td>Microcontroller-based systems - 2</td>
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<td>Term 1</td>
</tr>
<tr>
<td>Filters and Oscillators</td>
<td>120</td>
<td>Sem 2</td>
</tr>
<tr>
<td>Communications Systems</td>
<td>60</td>
<td>Term 2</td>
</tr>
<tr>
<td>Computer Science 1</td>
<td>120</td>
<td>Sem 2</td>
</tr>
<tr>
<td>Extra Maths (Calculus + Maths B + Matlab)</td>
<td>80</td>
<td>Sem 2</td>
</tr>
<tr>
<td>Elective</td>
<td>40</td>
<td>Term 1</td>
</tr>
<tr>
<td><strong>TOTAL HRS</strong></td>
<td><strong>640</strong></td>
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</table>

## Year 2, Semester 1

<table>
<thead>
<tr>
<th>Course Unit</th>
<th>Hours</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>Electronics Practice 2</td>
<td>100</td>
<td>Sem 1</td>
</tr>
<tr>
<td>Electronics Mathematics 3</td>
<td>120</td>
<td>Sem 1</td>
</tr>
<tr>
<td>Complex Power Supplies</td>
<td>40</td>
<td>Term 1</td>
</tr>
<tr>
<td>Circuit Analysis</td>
<td>80</td>
<td>Term 2</td>
</tr>
<tr>
<td>Analogue Electronics 2</td>
<td>140</td>
<td>Sem 1</td>
</tr>
<tr>
<td>Engineering Science</td>
<td>40</td>
<td>Term 1</td>
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<tr>
<td>Computer Science 2</td>
<td>120</td>
<td>Sem 1</td>
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<tr>
<td><strong>TOTAL HRS</strong></td>
<td><strong>640</strong></td>
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## Year 2, Semester 2

<table>
<thead>
<tr>
<th>Course Unit</th>
<th>Hours</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>Analogue Electronics 3</td>
<td>100</td>
<td>Sem 2</td>
</tr>
<tr>
<td>Advanced Digital Systems</td>
<td>60</td>
<td>Term 2</td>
</tr>
<tr>
<td>Electronics Mathematics 2</td>
<td>100</td>
<td>Sem 2</td>
</tr>
<tr>
<td>Computer Science 3</td>
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<tr>
<td>Digital Signal Processing</td>
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<td>Sem 2</td>
</tr>
<tr>
<td>Project Management</td>
<td>60</td>
<td>Term 1</td>
</tr>
<tr>
<td>Engineering Project</td>
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<td>Sem 2</td>
</tr>
<tr>
<td><strong>TOTAL HRS</strong></td>
<td><strong>620</strong></td>
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</table>

Valid as of 21/02/2012

NOTES:

1. this is the proposed Study Plan for students starting the Associate Degree in Feb 2012 and studying Full Time.
2. this is subject to change
Articulation and Credit Transfer

Articulation into University
The qualification is designed to provide graduates with articulation into further Higher Education Degrees. Graduates of the Associate Degree may obtain credit of up to 2 years into a relevant Bachelor of Engineering at any South Australian University.

Articulation from Uni into the Associate Degree
It is expected that students who choose to exit early from a Bachelor of Engineering program from any of the three South Australian universities, will be able to obtain significant credit into the Associate Degree. The amount of credit will depend on the amount of units studied at university.

Credit Transfer into an Advanced Diploma of Electronic Engineering
Graduates of the Associate Degree will be able to articulate credit transfer into an Advanced Diploma of Electronic Engineering. Given the differences in the mix of skills, the expected amount of credit is 1500 hours. This credit represents 75% of the total duration of the Advanced Diploma.

The credit may increase for graduates with experience in the industry.

Articulation from an Advanced Diploma of Electronic Engineering
Graduates of the Advanced Diploma of Electronic Engineering will be able to obtain a credit of maximum 1800 hours (90 units). This credit represents 75% of the total duration of the Associate Degree.

The amount of credit will depend on the chosen Advanced Diploma specialisation, the graduate’s currency of skills, his/her experience in the industry and any other extra study. For details see Appendix A.

Accessing Resources and Equipment

For every unit of competence you will be provided with a Unit Guide. This guide contains the unit lecturer’s details, the weekly topics and the assessment details.

You may also receive Learning Guides and lecture and practical/tutorial notes.

Some units will require you to purchase extra learning materials, like project components, hand tools, scientific calculator and text books. Some of these materials will already be included on your bill when you enrol. Others, like for example the scientific calculator or textbooks will need to be purchased by you from external vendors.

We recommend that the calculator you use is Sharp EL-531WH.

We also recommend that you purchase and have with you at all times on campus a USB storage device.
2012 Academic Calendar

Semester 1, 2012

<table>
<thead>
<tr>
<th>Term 1</th>
<th>6 Feb – 6 April</th>
<th>(9 weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Break</td>
<td>9 April – 20 April</td>
<td>(2 weeks)</td>
</tr>
<tr>
<td></td>
<td>– enrolment and study counselling available by appointment</td>
<td></td>
</tr>
<tr>
<td>Term 2</td>
<td>23 April – 29 June</td>
<td>(10 weeks)</td>
</tr>
<tr>
<td>Break</td>
<td>2 July – 20 July</td>
<td>(3 weeks)</td>
</tr>
<tr>
<td></td>
<td>– enrolment and study counselling available by appointment</td>
<td></td>
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</tbody>
</table>

Semester 2, 2012

<table>
<thead>
<tr>
<th>Term 3</th>
<th>23 July – 21 Sept</th>
<th>(9 weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Break</td>
<td>24 Sept – 5 Oct</td>
<td>(2 weeks)</td>
</tr>
<tr>
<td></td>
<td>– enrolment and study counselling available by appointment</td>
<td></td>
</tr>
<tr>
<td>Term 4</td>
<td>8 Oct – 14 Dec</td>
<td>(10 weeks)</td>
</tr>
</tbody>
</table>

IMPORTANT NOTES

1. Timetables and enrolment information will be posted on the Electronics website: www.tafesa.edu.au/electronics
2. Students may enrol online at myTAFESA. However, for students who are unsure about their study options and/or enrolment process,
   we strongly recommend that they book a time for a counselling session. See above the weeks when we offer enrolment and counselling session.
3. For counselling sessions, please call the Admin Office on 8348 4328/ 8348 1936 to make an appointment.
## Appendix A
### Subject Content Details

<table>
<thead>
<tr>
<th>Associate Degree Subject</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electronics</strong>&lt;br&gt;Mathematics 1&lt;br&gt;(100 hrs)</td>
<td>• Indices and Surds&lt;br&gt;• Ratios and Percentages&lt;br&gt;• Conversion of measurement units&lt;br&gt;• Solving worded problems&lt;br&gt;• Algebraic Expressions&lt;br&gt;• Solving simple equations&lt;br&gt;• Transposition&lt;br&gt;• Relations and Functions&lt;br&gt;• Logarithms&lt;br&gt;• Quadratics&lt;br&gt;• Pythagoras Theorem and Trig ratios&lt;br&gt;• Applications of trigonometry: Phasors and complex numbers as used in AC circuit analysis&lt;br&gt;• Trigonometric Functions and their applications in electronics signals</td>
</tr>
<tr>
<td><strong>Electronics</strong>&lt;br&gt;Mathematics 2&lt;br&gt;(100 hrs)</td>
<td>• Matrices and Linear Equations: matrix algebra; special matrices: unit, null, transposed, orthogonal, singular, symmetric; inverse matrix&lt;br&gt;• Sets of linear equations: linear systems of equations; Gauss elimination; Gauss-Jordan elimination, existence and uniqueness of solutions&lt;br&gt;• Determinants: general properties, rank of det and matrix, Cramer’s rule, existence and uniqueness of solutions (fund theorem)&lt;br&gt;• Vector spaces: vector algebra, linear independence, subspaces, dimension, basis&lt;br&gt;• Eigenvalues and Eigenvectors:eigenvalues, eigenvectors of matrices; linear independence, characteristic equation, trace, determinant, multiplicity; similar matrices, diagonalisation&lt;br&gt;• Vector spaces ( \mathbb{R}^n ): null spaces, column spaces; rank and rank theorem; scalar product; distance, length, angle between vectors; orthogonal vectors, orthonormal bases; Gram-Schmidt process&lt;br&gt;• Linear Transformations: Kernel and range, the matrix of a linear transformation, dimension theorem&lt;br&gt;• Series: sequences and series, progressions, convergence</td>
</tr>
<tr>
<td><strong>Electronics</strong>&lt;br&gt;Mathematics 3&lt;br&gt;(120 hrs)</td>
<td>• Limits – revision: definition, uniqueness, elementary limits, limit laws, left-hand, right-hand limits&lt;br&gt;• Derivatives – revision: differentiation, the squeeze theorem, trig limits, rates of change; rules for derivatives, the Chain Rule; derivatives of inverse functions&lt;br&gt;• Integration – revision: area, definite integral, fundamental theorem, using integration formulæ&lt;br&gt;• Functions: continuity; continuity on an interval; discontinuities; continuity and differentiation; unbounded functions; l’Hôpital’s rule; graphs (min/max, inflection, concavity)&lt;br&gt;• Applications of Differentiation: applied max/min, Rolle’s theorem and zeros&lt;br&gt;• Integration – techniques: improper integrals; techniques of integration: substitution, by parts, trig, partial fractions; numerical integration&lt;br&gt;• Applications of Integrals: mean, rms, volumes&lt;br&gt;• Differential equations: First order separable, Linear first order, linear second order with ct coeff.; applications to modelling – the logistic equation, volumes&lt;br&gt;• Taylor Series: Taylor and Maclaurin polynomials; Taylor’s theorem; error terms; power series, geometric series, convergence; Taylor and Maclaurin series, binomial series, differentiation and integration of power series&lt;br&gt;• Calculus of more than 1 variable: functions of more than 1 variable, limits and continuity, partial derivatives; mixed derivatives of higher order, chain rules; directional derivative, gradient, max rates of change; tangent planes, local max and min; second derivative test for functions of 2 variables.</td>
</tr>
<tr>
<td><strong>Analog</strong>&lt;br&gt;Electronics 1&lt;br&gt;(180 hrs)</td>
<td>• The purpose and application of amplifiers&lt;br&gt;• Basic characteristics of small signal amplifiers ( input and output impedance, current and voltage gain, bandwidth )&lt;br&gt;• DC bias conditions for a single-stage amplifier&lt;br&gt;• Small signal terminal characteristics of single-stage amplifiers&lt;br&gt;• Effects of coupling and bypass capacitors in single-stage amplifiers&lt;br&gt;• Various operational amplifier circuit configurations and where they are used</td>
</tr>
</tbody>
</table>
- Measured and calculated values of gain and output voltage for operational amplifier configurations (inverting, non-inverting, voltage follower, summing, comparators and Schmitt trigger differential)
- Operation of multistage amplifiers
- Predictable effects on the output voltage when amplifiers are subjected to control signal overdrive, bias faults and amplifying device faults
- Operating principles and application of DC power supplies
- Rectifier circuits

**Analog Electronics 2**

- Demonstrate an understanding of analogue electronic circuits concepts
- Analyse the performance of analogue electronic circuits
- Select correct tools and methods for analysis of circuits
- Modify, and redesign analogue circuits
- Demonstrate proficiency in the use of electronics measuring instruments
- Conduct and analyse relevant measurements and tests
- Identify common sources of error; avoid them, eliminate or compensate for them where possible, and quantify their significance to results and conclusions drawn
- Fault-find analogue electronics circuits and subsystems

**Analog Electronics 3**

- Sensors and transducers: static and dynamic characteristics
- Sensor types: strain and force; thermocouples; displacement, location, proximity; motion; light and radiation; pressure
- Signal amplification techniques
- Laplace transforms techniques and Fourier series;
- Diff. equation description of circuits, response under different excitations;
- Transfer functions techniques

**Engineering Science**

- Linear Motion
- Force and gravity
- Newton's laws of motion
- Rotational motion
- Potential and kinetic energy
- Principle of energy conservation
- Electrostatics
- Magnetic fields
- Nature and propagation of electromagnetic waves
- Ampere and Gauss laws

**Computer Science 1**

- Java programming techniques
  - Data and variables
  - Program flow
  - Classes
  - Inheritance
  - Polymorphism
  - Graphical User Interfaces

**Computer Science 2**

- Programming techniques as applicable to embedded system-based applications
- GUI design as used in the interface with embedded systems
- Lists, stacks, queues, sets, trees and hash tables and related algorithms

**Computer Science 3**

- Programming techniques as applicable to embedded system-based applications
- Programming techniques using C/C++
- Interrupts: Programmable timers; ADCs; Input Capture; Output Compare

**Elective**

- Students are required to choose an elective from a wide range of subjects offered at TAFESA or at any University.

**Electronics Practice 1**

- OH&S principles; Documenting hazards and identifying risks
- Hand and Power Tools
- High reliability soldering
- Soldering of Surface Mount Devices; Lead free soldering
- Component recognition
- Enterprise communication methods; Enterprise work activities records

**Digital Electronics**

- Comparison of analogue and digital signals
- Conversion between hex, binary and decimal number systems
<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Electronics Circuits</td>
<td>Precautions when handling electronic devices due to electrostatic discharge&lt;br&gt;Basic operation and characteristics of current sequential and combinatorial logic devices. Note: examples are: logic gates, multiplexers, counters, etc&lt;br&gt;Techniques for the analysis of simple digital systems encompassing: understanding of timing diagrams, prediction of the output state of logic devices for various input combinations, interfacing between logic families, etc&lt;br&gt;Basic operation and characteristics of current A/D and D/A converters</td>
</tr>
<tr>
<td>Filters and Oscillators</td>
<td>Electronic circuits concepts: definitions, basic quantities and units&lt;br&gt;Ohm's law, measuring R, V, I, circuit symbols&lt;br&gt;Electricity and magnetism: charge and current; batteries&lt;br&gt;DC circuits: series, parallel&lt;br&gt;Principles of AC signals and circuits&lt;br&gt;Basic introduction to physics concepts as encountered in electronics applications (sound, light, basic transducers)&lt;br&gt;Introduction to electronic systems (audio, video, communications)</td>
</tr>
<tr>
<td>Microcontroller-based Systems</td>
<td>AC signals (frequency, period, phase, average, rms)&lt;br&gt;Test equipment (CRO, signal generator, ac measuring instruments) – calibration, limitations,&lt;br&gt;Phasor diagrams&lt;br&gt;Analysis of RL circuits: series and parallel&lt;br&gt;Analysis of RC circuits: series and parallel&lt;br&gt;Analysis of RLC circuits: series and parallel&lt;br&gt;Ideal transformers&lt;br&gt;High pass, low pass, band pass and band stop filters ( operation, frequency response, bandwidth, attenuation, roll off, order of filter, test and measurements)</td>
</tr>
<tr>
<td>Communications Systems</td>
<td>Microcontroller architecture&lt;br&gt;Program storage types&lt;br&gt;Data storage types&lt;br&gt;I/O Ports: analogue/ digital&lt;br&gt;Integrated Peripherals: timers, interrupts etc&lt;br&gt;Control circuitry: system clock, reset etc&lt;br&gt;Industry standard programming environment</td>
</tr>
<tr>
<td>Electronics Practice 2</td>
<td>demonstrate an understanding of electromagnetic radiation&lt;br&gt;analyse the performance of a communication system&lt;br&gt;demonstrate critical problem solving skills related to the assessment and selection of communication systems&lt;br&gt;demonstrate basic proficiency in the use of electronics communication measuring instruments&lt;br&gt;conduct and analyse relevant measurements and tests&lt;br&gt;fault-find electronics communications subsystems</td>
</tr>
<tr>
<td>Complex Power Supplies</td>
<td>Printed circuit board materials and processes&lt;br&gt;Factors influencing the design of PCBs&lt;br&gt;PCB design tools and software&lt;br&gt;PCB design standards&lt;br&gt;Factors to consider in clarifying the nature of a fault&lt;br&gt;Methods for testing assumptions: Visual inspection; Sectional testing; Split-half tests; Component isolation</td>
</tr>
<tr>
<td>Circuit Analysis</td>
<td>Operation and characteristics of linear and switched mode power supplies&lt;br&gt;Regulator types and their characteristics: Linear- series, Linear- shunt, Switched-mode, Zener.&lt;br&gt;Isolation requirements and circuitry&lt;br&gt;Radiation suppression circuitry&lt;br&gt;Diagnostic procedures to isolate faults</td>
</tr>
<tr>
<td>Advanced Digital</td>
<td>DC circuit analysis: Voltage and current sources; Kirchhoff's voltage and current law; Mesh and nodal analysis; Superposition theorem; Thevenin's theorem; Norton's theorem; Millman's theorem; Maximum power transfer&lt;br&gt;AC circuit analysis: Sinewaves, phasors, radians; AC circuits: series and parallel; Apparent, reactive and real power, power factor correction; Source conversions; Series to parallel conversions; Mesh and nodal analysis; Superposition theorem; Thevenin's theorem; Norton's theorem; Maximum power transfer; Resonance&lt;br&gt;demonstrate an understanding of digital design techniques</td>
</tr>
</tbody>
</table>
| Systems  
(60 hrs) | • analyse the performance of digital electronic circuits  
• select correct tools and methods for analysis, design and implementation of digital circuits  
• modify, and redesign digital circuits  
• demonstrate proficiency in the use of electronics measuring instruments  
• conduct and analyse relevant measurements and tests  
• select digital devices for the design of digital systems  
• fault-find digital electronics circuits and subsystems |
| Digital Signal Processing  
(80 hrs) | • Signal processing concepts: Shannon’s Sampling Theorem; quantisation noise; spectrum of a sampled signal; response required for the input anti-alias filter; response required for the output reconstruction filter, including sin(x)/x compensation.  
• Impulse response of a linear-phase filter: (LP, BP, HP).  
• FIR filters: process of convolution; standard expression for discrete convolution; DSP system and convolution; DSP system to implement a FIR filter.  
• Adaptive filters: practical applications for adaptive filters; number of taps needed on an adaptive filter for a given application; DSP system and implementation of adaptive filter.  
• DSP Architecture  
• Modifying DSP code  
• Input and output analog filters  
• Simple IIR filters  
• High order IIR filters |
| Project Management  
(60 hrs) | • Defining project parameters  
• Management of: time, Finance, Quality, HR, Communication  
• Risk management and contingencies  
• Procurement management |
| Engineering Project  
(100 hrs) | • Project work |