ASIIN Accreditation Report

Master's Degree Programmes
Master of Engineering (Electrical)
Master of Engineering (Electrical with Business)
Master of Engineering (Mechanical)
Master of Engineering (Mechanical with Business)
Master of Engineering (Mechatronics)
Master of Engineering (Software)
Master of Engineering (Software with Business)

Provided by
University of Melbourne

Version: 29 September 2017

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A About the Accreditation Process

Title of the degree Programme	Labels applied for [1]	Previous accreditation	Involved Technical Committees (TC)[2]
Master of Engineering (Electrical)	ASIIN, EUR-ACE® Label	28.06.2011 – 30.09.16	02
Master of Engineering (Electrical with Business)	ASIIN, EUR-ACE® Label	none	02, 06
Master of Engineering (Mechanical)	ASIIN, EUR-ACE® Label	28.06.2011 – 30.09.16	01
Master of Engineering (Mechanical with Business)	ASIIN, EUR-ACE® Label	none	01, 06
Master of Engineering (Mechatronics)	ASIIN, EUR-ACE® Label	28.06.2011 – 30.09.16	01, 02
Master of Engineering (Software)	ASIIN, Euro-Inf® Label	28.06.2011 – 30.09.16	04
Master of Engineering (Software with Business)	ASIIN, Euro-Inf® Label	none	04, 06
Date of the contract: 14.03.2016 **Submission of the final version of the self-assessment report:** March 2016 **Date of the onsite visit:** 17.+18.05.2016 **at:** Melbourne School of Engineering, Parkville Campus			
Peer panel: Dipl.-Ing. Ernst Blank, Siemens AG; Prof. Dr.-Ing Madhu Chandra, Technical University Chemnitz; Prof. Dr. Bettina Harriehausen-Mühlbauer, University of Applied Sciences Darmstadt; Prof. Dr. rer.nat. Wolfgang H. Müller, Technical University of Berlin;			

[1] ASIIN Seal for degree programmes; EUR-ACE® Label: European Label for Engineering Programmes.

[2] TC: Technical Committee for the following subject areas: TC 01 – Mechanical Engineering/Process Engineering; TC 02 – Electrical Engineering/Information Technology); TC 04 – Informatics/Computer Science); TC 06 – Industrial Engineering.

Prof. Dr.-Ing. Christoph Rappl, University of Applied Sciences Deggendorf; Prof. Dr. Dietmar Saupe, University of Konstanz; Fanny Hartanti Sutantio, Student peer, Curtin University.
Representative of the ASIIN headquarter: Dr. Thomas Lichtenberg
Responsible decision-making committee: Accreditation Commission for study programmes
Criteria used: European Standards and Guidelines as of 15.05.2015 ASIIN General Criteria as of 28.03.2014 Subject-Specific Criteria of Technical Committee 01 – Mechanical Engineering/Process Engineering as of 09.12.2011 Subject-Specific Criteria of Technical Committee 02 –Electrical Engineering as of 09.12.2011 Subject-Specific Criteria of Technical Committee 04 –Informatics as of 09.12.2011 Subject Specific Criteria of Technical Committee 06 – Industrial Engineering as of 09.12.2011

B Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF[3]	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Master of Engineering (Electrical)	ME (Electrical)	None	Level 7	Full time or part time	/	3 years or 6 Semesters (full time)	12.5 points per subject	Late February and late July every year First intake Feb 2014
Master of Engineering (Electrical with Business)	ME (Electrical with Business)	None	Level 7	Full time or part time	/	3 years or 6 Semesters (full time)	12.5 points per subject	Late February and late July every year First intake Feb 2014
Master of Engineering (Mechanical)	ME (Mechanical)	None	Level 7	Full time or part time	/	3 years or 6 Semesters (full time)	12.5 points per subject	Late February and late July every year First intake Feb 2014
Master of Engineering (Mechanical with Business)	ME (Mechanical with Business)	None	Level 7	Full time or part time	/	3 years or 6 Semesters (full time)	12.5 points per subject	Late February and late July every year First intake Feb 2014
Master of Engineering (Mechatronics)	ME (Mechatronics)	None	Level 7	Full time or part time	/	3 years or 6 Semesters (full time)	12.5 points per subject	Late February and late July every year First intake Feb 2014
Master of Engineering (Software)	ME (Software)	None	Level 7	Full time or part time	/	3 years or 6 Semesters (full time)	12.5 points per subject	Late February and late July every year First intake Feb 2014
Master of Engineering (Software with Business)	ME (Software with Business)	None	Level 7	Full time or part time	/	3 years or 6 Semesters (full time)	12.5 points per subject	Late February and late July every year First intake Feb 2014

[3] EQF = The European Qualifications Framework for lifelong learning

For the degree programme Master of Engineering (Electrical), the subject-specific website states the following **intended learning outcomes**:

Collaborative research in Electrical and Electronic Engineering holds the key to solving a range of significant problems by tackling issues such as developing bionic implants, energy efficient telecommunications, sensor networks for irrigation and water resource management, future grid, electronics and photonics, neuroengineering, and ultra-broadband wireless and optical communications.

Electrical engineers play a key role in the design, implementation and management of systems that exploit electrical phenomena to solve practical problems. These include systems for automation, surveillance, energy conversion, power distribution, telecommunications and information processing, on both very large and very small scales.

You will develop technical skills through fundamental theory and practical laboratory work, learning from leading experts in the field, who work in partnership with organisations such as IBM and Alcatel-Lucent's Bell Labs. You will have the opportunity to take part in research under the guidance of leaders in electronic and photonic system design, telecommunications, power networks, signal processing and automatic control systems.

The Master of Engineering (Electrical) will provide you with a formal qualification in electrical engineering at the Masters level.

For the degree programme Master of Engineering (Electrical with Business), the subject-specific website states the following **intended learning outcomes**:

The Master of Engineering (with Business) is designed to provide students with a formal qualification in engineering at the masters level, with a business specialization that recognises the need for engineers to understand the management and workings of modern professional organisations.

Graduates will have a fundamental knowledge in financial, marketing and economic principles enabling them to work efficiently in any organisation, as well as the ability to apply the technical knowledge, creativity and team work skills learnt in their engineering training. This combination of knowledge and skills will be a powerful asset in the workplace.

Key Features

- Combine a technical specialization with exposure to the business and management skills that can help fast-track your career.

- Benefit from subjects co-developed by Melbourne Business School and tailored specifically for engineering students.
- Tight integration of subjects ensures that you understand the business side of engineering applications.
- Be empowered with strong technical skills, as well as the business skills to understand how organisations work.

For the degree programme Master of Engineering (Mechanical), the subject-specific website states the following **intended learning outcomes**:

Mechanical engineering applies human and material resources to the design, construction, operation and maintenance of machines to move people, goods and materials, generate energy, produce goods and services, control pollution and dispose of wastes.

Mechanical engineers focus on turning energy into power and motion. More specifically, this discipline looks at the generation, conversion and use of energy, as well as the design, construction and operation of devices and systems.

You will learn from world leaders in fluid mechanics, turbulence and biomechanics and have the opportunity to undertake an industry project combining research and practical implementation. You will benefit from group activities and site visits to help consolidate theory with practical applications. You will have access to well-equipped laboratories for materials testing, engine/turbine testing, wind tunnel investigations, simulation and metal forming processes. A heavy engineering workshop is available for the manufacture of testing facilities and research apparatus, as well as extensive computer facilities.

The Master of Engineering (Mechanical) will provide you with a formal qualification in mechanical engineering at the Masters level.

For the degree programme Master of Engineering (Mechanical with business), the subject-specific website states the following **intended learning outcomes**:

The Master of Engineering (with Business) is designed to provide students with a formal qualification in engineering at the masters level, with a business specialization that recognises the need for engineers to understand the management and workings of modern professional organisations.

Graduates will have a fundamental knowledge in financial, marketing and economic principles enabling them to work efficiently in any organization, as well as the ability to apply

the technical knowledge, creativity and team work skills learnt in their engineering training. This combination of knowledge and skills will be a powerful asset in the workplace.

Key Features

- Combine a technical specialization with exposure to the business and management skills that can help fast-track your career.
- Benefit from subjects co-developed by Melbourne Business School and tailored specifically for engineering students.
- Tight integration of subjects ensures that you understand the business side of engineering applications.
- Be empowered with strong technical skills, as well as the business skills to understand how organisations work.

For the degree programme Master of Engineering (Mechatronics), the subject-specific website states the following **intended learning outcomes**:

Mechatronics Engineering is a fast-changing discipline that blends mechanical, electrical and software engineering to develop automation and advanced manufacturing technologies.

You will develop in-depth technical knowledge combined with an understanding of broader issues, such as project management and intellectual property. You will learn to create and work with automated systems that feature computer control, such as robots, automobiles and CNC machines.

Opportunities for industry interaction include guest lectures and industry design projects using state-of-the-art facilities, with companies such as Ford, ABB, ANCA, Invertech, Sick Sensors and BAE Systems.

You will have access to world-class facilities, such as a state-of-the-art wind tunnel, alternative fuel engines, rehabilitation and tele-operated robots, motion tracking fluoroscopy, intelligent automotive platforms, service robotics, multi-copter autonomous platforms and intelligent large-scale irrigation and water management systems.

This course will provide you with a formal qualification in mechatronic engineering at the Masters level.

For the degree programme Master of Engineering (Software), the subject-specific website states the following **intended learning outcomes**:

Information Technology is revolutionising our society, from business and health, to manufacturing and entertainment. IT underlies scientific discoveries and medical breakthroughs, helps develop innovative new products and services, and is central to many aspects of modern life.

Software engineers use an understanding of computer science, design, engineering, management, mathematics and psychology to enable team production of large software systems. You will combine mathematical, scientific and technical knowledge with creativity to tackle large-scale software design and development projects.

You will have the opportunity to work closely with IT professionals in a year-long industry project, as well as building the essential team work skills required to implement and operate software engineering solutions in industry.

The Master of Engineering (Software) will provide you with a formal qualification in software engineering at the Masters level.

For the degree programme Master of Engineering (Software with Business), the subject-specific website states the following **intended learning outcomes**:

The Master of Engineering (with Business) is designed to provide students with a formal qualification in engineering at the masters level, with a business specialization that recognises the need for engineers to understand the management and workings of modern professional organisations.

Graduates will have a fundamental knowledge in financial, marketing and economic principles enabling them to work efficiently in any organisation, as well as the ability to apply the technical knowledge, creativity and team work skills learnt in their engineering training. This combination of knowledge and skills will be a powerful asset in the workplace.

Key Features

- Combine a technical specialization with exposure to the business and management skills that can help fast-track your career.
- Benefit from subjects co-developed by Melbourne Business School and tailored specifically for engineering students.
- Tight integration of subjects ensures that you understand the business side of engineering applications.
- Be empowered with strong technical skills, as well as the business skills to understand how organisations work.

C Peer Report for the ASIIN Seal[4]

1. The Degree Programme: Concept, content & implementation

Criterion 1.1 Objectives and learning outcomes of a degree programme (intended qualifications profile)

Evidence:

- University of Melbourne, Melbourne School of Engineering, Self-assessment for the ASIIN-Seal Chapter 1.

  http://www.mech.unimelb.edu.au/study/graduate.html (Accessed 01.06.2016)
- Master of Engineering (Electrical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical/overview (Accessed 01.06.2016)
- Master of Engineering (Electrical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical-business/overview (Accessed 01.06.2016)
- Master of Engineering (Mechanical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical/overview (Accessed 01.06.2016)
- Master of Engineering (Mechanical with business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical-business/overview (Accessed 01.06.2016)
- Master of Engineering (Mechatronics): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechatronics/overview (Accessed 01.06.2016)
- Master of Engineering (Software): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software/overview (Accessed 01.06.2016)

[4] This part of the report applies also for the assessment for the European subject-specific labels. After the conclusion of the procedure, the stated requirements and/or recommendations and the deadlines are equally valid for the ASIIN seal as well as for the sought subject-specific label.

- Master of Engineering (Software with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software-business/overview (Accessed 01.06.2016)
- Objectives-Module-Matrices as part of self-assessment report
- Discussions with management, staff, students, graduates and employers during onsite visit

Preliminary assessment and analysis of the peers:
The University of Melbourne seeks accreditation for the Master of Engineering programme with seven different specializations namely Electrical, Electrical with Business, Mechanical, Mechanical with Business, Mechatronics, Software and Software with Business. The peers welcomed that each specialization had its own website providing information on the goals of the programmes and the structure of each core discipline. However, the peers underlined that the learning objectives as described on the website are very generic and do not properly outline the specific character of the specialization. The University of Melbourne responded that for each core discipline "technical specifications" had been developed which provide a clear picture of the qualification profile the graduates would obtain. Unfortunately, these technical specifications had not been available to the peers and could not be found on the website either. The peers asked the University of Melbourne to make these technical specifications available.

The peers took note of the objectives and learning outcomes of the Master of Engineering as described in the Self-Assessment Report; however, there is no description for the specializations. The auditors examined the areas of competence as set forth by the Subject-Specific Criteria (SSC) for degree programmes and came to the following conclusions:

The peers comprehended that the Master of Engineering wants to achieve that graduates gain a theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline. Additionally, the students shall obtain a conceptual understanding of mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. The peers concluded that this corresponds to the aim to develop a broad and sound knowledge in *mathematics, science and engineering.* The learning objectives of the Master of Engineering state that graduates shall have acquired the mathematical and computational skills necessary for the solution of theoretical and practical problems for further professional development and for meeting future changes in technology. The peers understood that this is in line with the subject-specific criterion of ASIIN for mechanical, electrical and software engineering programmes that graduates are qualified to identify, abstract, formulate and holistically *solve problems peculiar to engineering* and conse-

quently obtain key skills in the field of *Engineering Analysis*. Furthermore students shall possess analytical, problem-solving and, where relevant, design skills, including those appropriate for sustainable development. The peers expressed their impression that the competences in the field of *Engineering Design* could be elaborated in more detail with regard to the creativity to develop new and inventive products, processes and methods. Additionally, the Self-Assessment Report states that graduates shall have a sound fundamental understanding of the scientific principles underlying technology and a discernment of knowledge development and research directions within the engineering discipline. But the peers were lacking the envisaged competence to plan and carry out analytic experimental investigations. The peers indicated that the learning objectives in the field of *Investigations and Assessment* could also be developed further. The peers welcomed the well formulated objectives focusing on *Engineering Practice* like the ability of graduates to apply established engineering methods to complex engineering problem solving and to be fluent in the application of engineering techniques, tools and resources. Graduates shall also apply systematic engineering synthesis and design processes. The peers pointed out that *Transferable Skills* as they are described in the Self-Assessment Report cover a number of different personal competences like ethical conduct and professional accountability and effective oral and written communication in professional domains. The peers particularly welcomed the emphasis on managerial competences like the professional use and management of information, professional conduct, and the effective team membership and team leadership.

The peers concluded that the subject specific criteria of ASIIN are partly covered in the learning objectives of the Master of Engineering despite the stated deficiencies. Additionally, the peers pointed out that the final qualification profile of an electrical engineer, a mechanical engineer, a mechatronics engineer and a software engineer should differ considerably. This differentiation does not become transparent in the presented learning outcomes. The peers summarised that the educational objectives/learning outcomes have to describe the subject-specific and professional classification of the qualifications gained in the different specializations. A description of meta-objectives for a Master of Engineering is insufficient.

Furthermore, the University of Melbourne applied for the EUR-ACE® (European Accredited Engineer) Label and the Euro-Inf® Label for the two specializations Software. The EUR-ACE® Label and the Euro-Inf® Label are quality certificates for engineering and IT degree programmes and are recognized Europe-wide. During the accreditation process, the reviewers verified as to whether the engineering degree programmes comply with the criteria fixed in the EUR-ACE Framework Standards and the IT programmes with the Euro-Inf® standards. The Subject-Specific Criteria (SSC) of the Technical Committee for

Mechanical Engineering and Process Engineering as well as those of the Technical Committee for Electrical Engineering and Industrial Engineering are closely linked to the EUR-ACE Framework Standards; the same applies to the Software Engineering programmes and the Euro-Inf® Framework Standards. Consequently, the analysis of the Subject-Specific Criteria encompasses the EUR-ACE and the Euro-Inf® Framework Standards. The peers underlined that the study objectives of different specializations do not become transparent and the same applies to the EUR-ACE and Euro-Inf® Framework Standards regarding the intended learning outcomes and the qualification descriptors relevant to level 7 (Master) of the European Qualifications Framework for Lifelong Learning.

The peers asked how the learning objectives of the Master of Engineering with regard to specializations under review had been developed and revised and which other stakeholders had been involved. The University of Melbourne explained that there has been a shift in the vision and strategic orientation of the university towards stronger cooperation with industry. The cooperation between businesses and professors from the University of Melbourne take place with "Industry Advisory Groups" which have been formed for all the Departments. These groups provide insights on the strategic planning of the University and also on teaching and research programmes. Representing a broad spectrum of industries, each member provides a link to the external stakeholders who comprise their field of expertise. The University provides a list of members of these advisory groups for each specialization. The "Industry Advisory Groups" typically meet at least three times a year and work to support the Head of Department providing advice on module content. The peers welcomed this systematic exchange platform and understood that business partners provide feedback on the programmes under accreditation to the University regarding the competences of graduates and the respective degree programmes.

The peers asked if the business representatives employed graduates from the University of Melbourne and if they thought that graduates were properly prepared for the requirements of the labour market. The representatives from the University explained that Master programmes had just been introduced to Australia five years ago. At the beginning the additional benefit for the company of a graduate with a Master's degree had not been clear to the companies. Businesses with a research orientation appreciate Master's graduates and like to employ them because they are "critical thinkers". But the business representatives also indicated their concern that for some Master's graduates it might be difficult to find adequate employment because the competences of Master's graduates are still not well known among employers; however, this may change in future if Master graduates and their competences will be more among employers and it also depends on the exact specialization. Some specializations are more positive about their employment perspectives than others. In the field of Electrical Engineering, for example, the students

expressed their feeling to study a profession which is not so much demanded on the market anymore. The peers comprehended that there is a challenge for Master's graduates on the labour market but this may change in the future.

Criterion 1.2 Name of the degree programme

Evidence:

- Master of Engineering (Electrical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical/overview (Accessed 01.06.2016)
- Master of Engineering (Electrical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical-business/overview (Accessed 01.06.2016)
- Master of Engineering (Mechanical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical/overview (Accessed 01.06.2016)
- Master of Engineering (Mechanical with business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical-business/overview (Accessed 01.06.2016)
- Master of Engineering (Mechatronics): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechatronics/overview (Accessed 01.06.2016)
- Master of Engineering (Software): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software/overview (Accessed 01.06.2016)
- Master of Engineering (Software with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software-business/overview (Accessed 01.06.2016)

Preliminary assessment and analysis of the peers:

The peers understood that the overarching name of the degree programme is Master of Engineering with the different specializations. Even though the peers did not have any objection to this concept they wondered if it may not be more straight forward to potential students if the programme was called e.g. Master of Electrical Engineering instead of Master of Engineering (Electrical).

The "with Business" specializations include five engineering business subjects, some of which are taught with the Melbourne Business School; this is discussed in more detail

under criterion 1.3. The learning objectives of the specializations are not fully available as described in more detail under criterion 1.1; however, the peers could see from the curricula of the specializations that the names properly reflect the content of the curricula.

Criterion 1.3 Curriculum

Evidence:

- University of Melbourne, Melbourne School of Engineering, Self-assessment for the ASIIN-Seal Chapter 1.
- Objective-Matrices provided in the Self-Assessment Report, Chapter 1.
- Sequence of Modules and Curricula provided in the Self-Assessment Report, Chapter 1.

Subject Descriptions:

- Master of Engineering (Electrical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Electrical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical-business/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechanical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechanical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical-business/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechatronics): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechatronics/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Software): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Software with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software-business/degree-structure#degree-structure (Accessed 01.06.2016)

Preliminary assessment and analysis of the peers:

On the webpage of the Melbourne School of Engineering the different specializations are published under the academic Departments like Computing and Information Systems, Electrical and Electronic Engineering, and Mechanical Engineering. The peers welcomed that each subject-specific webpage entails the description of the curriculum and the module descriptions.

The three year Master of Engineering programmes are designed so that the underlying principles of the discipline are delivered in the first year, the core discipline-based material is consolidated in the second year and the programme concludes with a capstone project and elective material in the third year.

The peers understood that the first semester is not compulsory for all students but needs to be taken by those who do not meet the requirements to register for the second year (compare criterion 1.4). In the first year, students have to take the subject “Engineering Practice and Communication”. Additionally, students extend their maths knowledge with “Engineering Mathematics” and “Engineering Computation”, a subject common to both electrical engineering and mechanical engineering studies. Finally, students study five engineering subjects from their core discipline. The peers welcomed this introductory year and concluded that it is designed to set the basis for the more advanced topics in the second and third year of the Master of Engineering.

The peers based their assessment whether the curricula of the different specializations are designed in a way to achieve the intended learning outcomes on the subject descriptions and the module-objective matrices. The peers appreciated that the University of Melbourne provided a module-objective matrix for each specialization illustrating the alignment with the Subject-Specific Criteria (SSC) of ASIIN.

When analysing the curriculum of the Master of Engineering (Electrical) against the Subject-Specific Criteria of the Technical Committee Electrical Engineering and Information Technology the peers confirmed that subjects like “Engineering Computation”, “Engineering Mathematics”, and “Probability and Random Models” provide in-depth knowledge in advanced fundamentals in *mathematics and sciences*. Furthermore, the peers could also comprehend that a number of subjects contribute to *Engineering Analysis* and *Engineering Design* including “Electronic Circuit Design”, “Embedded System Design” and the final year capstone subject. However, the peers underlined that important components like “Field Theory” were missing and learnt that this was integrated in the subject “Electronic System Implementation”. The peers were pleased that “Field Theory” was part of the curriculum but underlined that from their point of view “Field Theory” should be a stand-alone subject and should have a more prominent place in the curriculum. Consequently, the peers recommended that field theory is being made more transparent and receives a

stronger focus in the curriculum. The peers could understand that the capstone project is supposed to develop competences in the field of *Investigation and Assessment*. It was plausible to the peers that the *Engineering Practice* is considered in the "Engineering Practice and Communication" and is reinforced in various subjects in the course culminating in the final year, Electrical Engineering Capstone Project.

When analyzing the Master of Engineering (Mechanical) the peers understood that modules like "Engineering Mathematics", "Engineering Computation", "Engineering Mechanics", "Mechanics and Materials" and "Thermodynamics and Fluid Mechanics" developed extensive advanced knowledge of *mathematic and scientific* and engineering principles of mechanical engineering and its interdisciplinary expansion. Then a number of advanced electives follow in the curriculum building on subjects of the earlier years. It was also plausible to the peers that subjects like "Design for Manufacture", "Mechanical Design", "Design for Integration", and the Capstone Project supported the development of competences in the field of *Engineering Analysis* as well as *Engineering Design*. The peers confirmed that also several of the electives including "Engineering Entrepreneurship" fostered the development of competences in *Engineering Design*. Competences in the field of *Investigations and Assessment* can be obtained in the Capstone Project and the "Internship elective subject" as the peers confirmed. The *Engineering Practice* is developed in the subject "Engineering Practice and Communications". It is then further developed in "Design for Manufacture and Design for Integration" as the peers concluded.

In the Master of Engineering (Mechatronics) competences in the field of *Knowledge and Understanding* can be obtained in subjects like "Engineering Mathematics", "Engineering Computation", "Engineering Mechanics", "Foundations of Electrical Networks", "Programming and Software Development", "Numerical Programming for Engineers", "Systems Modelling and Analysis" and "Mechatronics Systems Design" as the peers confirmed. The peers also underlined that competences in the field of *Engineering Analysis* and *Engineering Design* can be obtained in core subjects such as "Software Modelling and Design", "Mechatronics Systems Design" and the Capstone Project as well as in several of the electives including "Engineering Entrepreneurship". Furthermore the peers also indicated that *Engineering Practice* is covered in several core and elective subjects including the Capstone Project.

In the Master of Engineering (Software) in-depth knowledge in advanced fundamentals in *mathematics and sciences* shall be obtained in modules like "Engineering Computation", "Internet Technologies", "Algorithms and Complexities", "Programming and Software Development", "Models of Computation", and "Software Modelling and Design" as the peers understood. It was plausible to them that a number of subjects contribute to *Engineering Analysis* including "Software Testing and Reliability", "Modelling Complex Soft-

ware Systems" and "Masters Advanced Software Project". Competences in the field of *Engineering Design* are taught in modules like "Software Requirements Analysis", "IT Project and Change Management", and "Software Design and Architecture" as well as several elective subjects as the peers confirmed. Competences in the field of *Investigations and Assessment* are developed through two project-based subjects: the "Masters Software Engineering Project" and "Masters Advanced Software Project". The peers thought that these two projects were appropriate to develop this competence. *Engineering Practice* and Product Development are addressed in both the "Masters Software Engineering Project" as well as the year-long "Masters Advanced Software Project".

The peers understood that particularly in modules like "Engineering Practice and Communication", the "capstone project" and a number of other modules which entail laboratory assignments and group work the students can obtain *Transferable Skills* in different field within each of the disciplines. The peers thus considered the corresponding recommendation from the first accreditation to be fulfilled.

The peers concluded that apart from the indicated limitations the curricula of the Master of Engineering (Electrical), Master of Engineering (Mechanical), Master of Engineering (Mechatronics), and Master of Engineering (Software) are designed in a way to develop the competences as exemplified in the Subject-Specific Criteria of ASIIN and consequently also fulfil the requirements of the EUR-ACE seal.

The three specializations "with Business", namely Electrical with Business, Mechanical with Business, and Software with Business, combine a technical specialization with exposure to the business and management skills. The students benefit from subjects co-developed by the Melbourne Business School and tailored specifically for engineering students. The peers comprehended that the integration of technical and managerial subjects should ensure that students understand the business side of engineering applications. The peers concluded that this "with Business" component was a sensible combination of business and technical skills.

Criterion 1.4 Admission requirements

Evidence:

- University of Melbourne, Melbourne School of Engineering, Self-assessment for the ASIIN-Seal Chapter 1.4.
- https://policy.unimelb.edu.au/ (Accessed 01.06.2016)

Preliminary assessment and analysis of the peers:

The peers learnt that students have to hold a Bachelor's degree if they want to apply for the Master of Engineering. Students who successfully completed the Bachelor of Science degree in the relevant major at the University of Melbourne with an average of at least 65% are given 100 points credit which means that they do not have to attend the first year in the 3-year Master programmes. Students who complete the sequence of subject specific technical engineering subjects in their Bachelor of Commerce degree are given at least 50 points credit meaning that they must complete between 2 and 2½ years of the 3-year Master of Engineering programme. The peers comprehended that the first year of the Master programme consists of Bachelor modules to ascertain that all students have the same engineering knowledge base when entering the second and the third year. Depending on the specialization, the students have to prove a certain technical background. If applicants seek entry into either the Electrical or Electrical with Business specializations, they must complete either the Electrical Systems major in the Bachelor of Science degree or they must complete a series of electives in the Bachelor of Commerce programme. Students seeking entry into either the Mechanical or Mechanical with Business specializations must complete either the Mechanical Systems major in the Bachelor of Science degree or a series of subjects in the Bachelor of Commerce programme. Students who want to study the Software or Software with Business specializations must complete either the computing and Software Systems major in the Bachelor of Science degree or a series of subjects in the Bachelor of Commerce programme. Students wishing to complete the Master of Engineering (Mechatronics) programme can have followed several paths through undergraduate Science and Commerce degrees. To be admitted into the Master of Engineering programme from another institution students must have attained a grade equivalent to 65 % at Melbourne and have completed the equivalent of first year mathematics and first year science representing between them half a year of study. Students seeking entry into the Electrical, Electrical with Business, Mechanical, Mechanical with Business or Mechatronics specializations must have physics as their science subject, while students who want to study the Software or Software with Business programmes must have either computing, computer science or programming as their science component in their first degree. The peers welcomed the strict technical admission requirements for the Master of Engineering and concluded that these requirements support the achievement of the intended learning outcomes by the admitted students.

Students entering the Master of Engineering programmes must also satisfy the English language requirements. These may be met in a number of ways including different internationally acknowledged English tests. The peers noticed in the self-assessment report that in most programmes the majority of students come from overseas; in the Electrical

Specialization, for example, 120 students originate from China and 47 come from Australia. Other nationalities are negligible in comparison. The peers asked if it caused any difficulties in the programme implementation that a vast majority of students originate from a non-English speaking country. The lecturers admitted that in some seminars the working groups are formed by foreign students only. The lecturers noticed the tendency that in these groups the working language was the native language of the students; one Australian student even added the example that once he was the only Australian in a working group consisting of foreign students speaking their native language only and he was left out of the group communication. Additionally, students sometimes have to translate the tasks of the group work into the native language for their fellow students who do not fully comprehend the English explanations. Students added during the audit that a number of foreign students are very shy and do not feel comfortable to speak English. The University of Melbourne indicated to be aware of the challenges if students are coming primarily from a single foreign country. It is planned to have more balanced student groups from different countries; the peers welcomed this intention. During the audit discussions the peers gained the conviction that despite the English language entry requirements, the English language competences for some foreigners was not at a level needed to fully comprehend the technical English lectures and to be able to properly work in English. As far as the peers could see, this lack of technical language competence had a significant impact on the quality of group work and caused imbalances in the contributions of students as the students had also highlighted. The peers pointed out that a mere international English test may not suffice to assess whether students are able to follow *technical* lectures adequately. The peers indicated their concern that this language issue may have a negative impact on the overall quality of learning and teaching. Consequently, the peers underlined that the admission rules have to ensure that students who are admitted have an appropriate level of English to follow the professional classes and are able to express themselves orally and in writing.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 1:

The peers welcomed the handbook entries for all programs in Cluster C and noticed that more technical information is available for each specialisation. However, the peers still noted that the subject-specific learning outcomes and expected professional profiles for all specialisations had not yet been provided. The peers appreciated the indication of the University to develop the “technical specialisations” for all the specialisations in the Master of Engineering. These “technical specialisations” are supposed to be published on the websites so that it will be clear to potential employers and students what the graduates of each specialisation are capable of producing in the workplace. As intended programme

learning outcomes are considered to be an incremental piece of reference for students, employers and other stakeholders, the panel concluded that the corresponding accreditation expectation was not yet fulfilled and that a requirement should be issued to this extent.

The peers gratefully noted the explanation in which modules "Field Theory" is being taught but still underlined the need to make this more transparent in the module descriptions. The peers also welcomed the intention of the University of Melbourne to examine making "Field Theory" more prominently in the course by developing a new subject such as "Microwave Systems and Antennas".

Concerning the admission requirements and the English language competence of incoming students, the panel acknowledged the different options the University is considering. Whatever measures the University of Melbourne is going to take, at this stage the panel considered improvements in this area to still be necessary.

Overall, the panel concluded that criterion 1 was not yet fully met by the programs in the areas mentioned (program objectives, curriculum, admission requirements).

2. Degree Programme: Structures, Methods & Implementation

Criterion 2.1 Structure and modularity

Evidence:

- University of Melbourne, Melbourne School of Engineering, Self-assessment for the ASIIN-Seal Chapter 2.1 (including statistics on mobility)
- Policies of the University of Melbourne: https://policy.unimelb.edu.au/audience/Students (Accessed 01.06.2016)
- Regulation 11.1.A2 - Courses, Selection, Admission and Assessment: http://unimelb.edu.au/__data/assets/pdf_file/0005/1655726/r111a2.pdf (Accessed 01.06.2016)

Degree Structure / Subject Descriptions:

- Master of Engineering (Electrical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical/degree-structure#degree-structure (Accessed 01.06.2016)

- Master of Engineering (Electrical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical-business/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechanical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechanical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical-business/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechatronics): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechatronics/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Software): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Software with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software-business/degree-structure#degree-structure (Accessed 01.06.2016)

Preliminary assessment and analysis of the peers:
The degree structure of the seven specializations of the Master of Engineering under review is clearly outlined on the subject specific website for each specialization. All specializations consist of subjects which comprise a sum of teaching and learning; the study programmes are fully modularized and each module earns the same number of credit points. The peers acknowledged that all subjects can be completed within a semester except for the capstone projects which run over two semesters. Additionally, the Master of Engineering programmes allow students to commence their studies either in Semester 1 around early March or in Semester 2 around late July. The peers appreciated this flexible structure of the curriculum. The subject descriptions are also published on the subject specific website in English and can be downloaded. Students also reported no issues with regard to the structure of the specializations or the modules. Based on the analysis of the sequence of subjects and the respective subject descriptions the peers concluded that the structure of the specializations ensures that the programmes can be completed within the foreseen time. With the exception of the specialization Mechatronics students in each of the specializations are able to choose at least four electives which allow them to follow their interests; this was judged positively by the peers. The structure of all Master of Engineering streams, including the "with business" streams, is designed in a way that stu-

dents can switch to the "with business" streams until about halfway through the programme. Additionally, the peers positively noted that the Melbourne School of Engineering has developed the "Skills Towards Employment Programme" (STEP) to support students in developing their written and verbal communications. STEP is integrated into the subjects in the final two years of their Master of Engineering programmes and described in the subject description of the capstone project as the peers confirmed. Although the students reported that this STEP module was fairly "light" from their point of view, the peers welcomed this effort. However, in light of the language issue raised under criterion 1.4, they wondered if this subject should not rather take place at an early stage of the study programmes.

The peers understood that the majority of students come from abroad and their study at the University of Melbourne can be considered as international mobility. The University of Melbourne pointed out that the School of Engineering still encourages students to undertake exchange programmes either for a short period of perhaps 4 weeks for a short project or for one or two semesters. Based on the statistics provided by the University of Melbourne, the peers learnt that a significant number of students from the School of Engineering participated in some kind of international mobility. The University pointed out that the numbers of student mobility have increased in the last years. The peers were convinced that the University of Melbourne provides sufficient opportunities and also encourages students to participate in mobility programmes.

The University of Melbourne underlined that students are normally encouraged to arrange learning agreements with their supervisors and the respective Department to ascertain the recognition of credits. Besides, the University of Melbourne published all rules and regulations on its webpage of university policies. In Regulation 11.1.A2 - Courses, Selection, Admission and Assessment, Part 5 – Academic Credit the peers could verify that the rules of recognition of credits are clearly defined and are in line with the Lisbon Convention, to which Australia is a signatory.

Criterion 2.2 Workload and credit points

Evidence:

- University of Melbourne, Melbourne School of Engineering, Self-assessment for the ASIIN-Seal Chapter 2.2

Degree Structure / Subject Descriptions:

- Master of Engineering (Electrical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical/degree-structure#degree-structure (Accessed 01.06.2016)

- Master of Engineering (Electrical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical-business/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechanical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechanical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical-business/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechatronics): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechatronics/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Software): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Software with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software-business/degree-structure#degree-structure (Accessed 01.06.2016)
- Subjects and Credit Points Policy: https://policy.unimelb.edu.au/MPF1015 (Accessed 01.06.2016)

Preliminary assessment and analysis of the peers:
The peers understood that a standard full time load at the University of Melbourne is 100 credit points per year; 50 points of subjects in the first and 50 points of subjects in the second semester. Each subject is worth 12.5 credits or a multiple of this. For all Master programmes, one such subject is estimated at 170 hours for the first two semesters and 200 hours for the second and third year of student workload including attending lectures, self-time study and taking examinations as it is specified in the Subjects and Credit Points Policy; acceptable variations to the total time commitment are in the range of ± 20%. Students normally complete four subjects per semester. The panel considered the workload and credit system to be very clear and transparent. Accordingly, the annual workload is approximately 1360 hours in the first two semesters and 1600 hours in the second and third year which is in the range typical for European degrees. The peers also appreciated that the subject descriptions indicate the time commitment; the contact hours are outlined and the total time commitment, assuming that the non-contact time is dedicated to self study. In terms of transparency of workload for each subject, the peers saw that the recommendation from the first accreditation has been fulfilled.

The students responded to the question whether the workload and the credit units were realistic that this depended strongly on the working attitudes of the students. Some students, for example, only attended the lectures and did not do any repetition which caused a very high workload prior to the examinations. But, in summary, the students confirmed that the workload corresponds more or less with the credit points; if there were any issues of workload this could be discussed during the staff-student liaison committee meetings (compare criterion 6) as the students explained. Based on the information provided, the peers could not see if there was any systematic approach to verify if the awarded credit units for the subjects correspond to the actual workload of the students; e.g. the Subject Experience Survey does not contain a corresponding question. The peers asked the University of Melbourne to explain if and how the workload and credit point relation is systematically verified. Due to the lack of information, the peers were unable to judge if the recommendation from the first accreditation had been fulfilled.

Criterion 2.3 Teaching methods

Evidence:

- University of Melbourne, Melbourne School of Engineering, Self-assessment for the ASIIN-Seal Chapter 2.3

Degree Structure / Subject Descriptions:

- Master of Engineering (Electrical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Electrical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical-business/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechanical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechanical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical-business/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechatronics): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechatronics/degree-structure#degree-structure (Accessed 01.06.2016)

- Master of Engineering (Software): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Software with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software-business/degree-structure#degree-structure (Accessed 01.06.2016)

Preliminary assessment and analysis of the peers:
The peers understood that the University of Melbourne applies a range of different teaching styles to develop technical as well as non-technical skills such as teamwork, time management and problem solving. Some subjects are more traditional involving three or four lectures a week with an hour-long tutorial class. In other subjects, students have only one lecture and a two-hour workshop. Each of the specializations has at least one subject in their second year which has a workshop-based component where the emphasis is on design through a series of project-based workshops. The students confirmed that they appreciate this project based learning. The peers were convinced that the lecturers apply different forms of teaching closely linked to the intended learning outcomes. Additionally, the peers welcomed that the "Learning and Teaching" methods are described in a detailed and comprehensible manner in the subject descriptions and give the students a clear and transparent overview of the teaching methods. As indicated under criterion 1.4, the peers understood that the students, in principal, were fond of group and team work and appreciated the challenge to resolve technical problems. However, based on the background of foreign students, stemming from countries where independent, self-regulated and teamwork are less common, the teamwork leads sometimes to issues in the groups as some students highlighted. Additionally, language issues as indicated under criterion 1.4 also contribute to issues in the various teaching methods. Considering the challenges of different cultures and the mentioned issues to work in teams, the peers advocated the introduction of intercultural coaching support especially for student group work to support all students to be able to constructively achieve the intended learning outcomes of the subject.

In the last two years the School has commenced recording short 5 to 10 minute video lectures to supplement regular lectures and tutorial material; these are made available to students on the intranet, including blackboard notes. The intranet is also used for problem-solving among students as well as homework. Teaching staff members usually post answers to students' questions after they have tried to solve problems among themselves

The panel furthermore discussed the question of engineering ethics and was convinced that the topic was taught and assessed in a number of lectures and workshops placing

real-life scenarios to students. In particular, the subjects in the "with business" streams used different teaching methods such as case-studies to deal with issues of business governance, ethics (for example in marketing) as well as professional development topics such as communication, teamwork and leadership.

Apart from improving the environment of group work the peers concluded that the applied didactical approaches of teaching were well designed and appropriate to reach the intended learning outcomes.

Criterion 2.4 Support and advice

Evidence:

- University of Melbourne, Melbourne School of Engineering, Self-assessment for the ASIIN-Seal Chapter 2.4
- http://services.unimelb.edu.au/ (Accessed 01.06.2016)

Preliminary assessment and analysis of the peers:

The peers examined the services webpage as well as the subject specific webpage of the different specializations of the Master of Engineering and gained the impression that all relevant information about the study programmes and the University services are available. The students confirmed that they could easily find everything they needed to get an understanding of the different programmes. The University of Melbourne explained that they had introduced the concept of the "Stop 1", a centralized advisory service which is the first reference point for all students. Prior to this concept, different advisors had been in place which had proven to be ineffective. This "Stop 1" advisor tries to provide first assistance and only if the requested support cannot be provided, the student is sent to specific service institutions of the University or for content-related questions to the Deputy Dean (Academic) and the other staff members who are very supportive as the students underlined. The peers acknowledged this new approach and learnt that the University cannot judge the effectiveness of this system yet due to the short time of operation (it was introduced in January 2016). Furthermore, the students highlighted that for each subject they had a tutorial; tutors are normally PhD candidates and teaching assistants. Apart from academic support, the University provides child care facilities at two locations adjacent to the University, Counselling and Psychological Services, Student Equity and Disability Support, Financial Aid as well as Health Care Services. The auditors concluded that there were adequate resources available to provide individual assistance, advice and support for all students.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2:

The panel welcomed the feedback of the institution regarding the structure, international mobility and teaching methods. The peers appreciated that the University of Melbourne will develop an extra question in the official questionnaire for all subjects related to engineering and IT to get feedback from the students with regard to the workload in that subject. The peers also took positive note of the indication that the University of Melbourne plans to address the matter of intercultural communication in the revised compulsory "Engineering Practice and Communication" (ENGR90021) subject. The peers highly welcomed the plan to have a component teaching students to be more aware of cultural background and provide them with strategies on being more effective in an intercultural group.

Overall, the panel considered criterion 2 to be partly fulfilled as some aspects with regard to the evaluation of student workload and intercultural communication can still be improved.

3. Examination: System, Concept & Implementation

Criterion 3 Exams: System, concept & implementation

Evidence:

- University of Melbourne, Melbourne School of Engineering, Self-assessment for the ASIIN-Seal Chapter 3
- Table A3.3 – 1 : Semester 2, 2015 Examination Schedule for all ME (Electrical) Subjects
- Examinations Procedure: https://policy.unimelb.edu.au/MPF1028 (Accessed 01.06.2016)
- Examination of Graduate Research Students Policy: https://policy.unimelb.edu.au/MPF1207 (Accessed 01.06.2016)
- Other examination related policies
    - Academic Performance Policy
    - Assessment Procedure
    - Coursework Assessment Design and Methods Procedure
    - Coursework Assessment Policy
    - Exam Clash Advice Form
    - Grading Scheme Procedure

- Rescheduled Examinations Guidelines
- Special Consideration Policy
- Student Complaints and Grievances Policy
- Student Complaints and Grievances Procedure

Subject Descriptions including types of examinations:

- Master of Engineering (Electrical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Electrical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical-business/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechanical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechanical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical-business/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechatronics): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechatronics/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Software): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Software with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software-business/degree-structure#degree-structure (Accessed 01.06.2016)

Preliminary assessment and analysis of the peers:

The peers confirmed that there is a clear indication of the type, expectations, timing and weighting of every element of assessment in the subject descriptions and understood that the exams are subject related and provide students continuous feedback on their progress. There are assignments or project based assessments where students are assessed based upon their project work or end of semester exam and either assignment or mid-semester test. The peers analyzed examinations and final theses provided by the University and concluded that they were of adequate standard to assess if the intended learning outcomes had been achieved.

Additionally, the peers could see in the subject descriptions that a wide range of types of examinations like multi-choice quizzes, (group) assignments, laboratories with pre-lab questions, oral presentations or project work (in groups) was used. The peers analyzed the subject descriptions as to whether the examinations are structured to cover all of the intended learning outcomes. The peers verified that for all specializations the mandatory subject "Engineering Practice and Communication", a team-based oral presentation and a written report, were required. Furthermore, the capstone project requires an oral examination; some of the elective subjects also have mandatory oral examinations. However, based on the other subject descriptions the peers concluded that only few oral assignments had to be conducted in the Master programmes; the students confirmed that only the two modules required oral examinations. Given the fact, that on the one hand especially foreign students tend to be timid and have difficulties to express themselves orally and, on the other hand, graduates of a Master of Engineering are expected to take a leading role at their future workplaces, the peers recommended to introduce more oral student presentations to reach the intended learning outcomes defined.

The peers were told that the end of semester examinations are scheduled centrally by the University over a 13 day period. The exam schedules are adjusted so that no student should have more than two written examinations scheduled on the one day, and no more than three examinations in a 48-hour period. Generally, the examinations for the larger subjects are scheduled early in the examination period. The University provides a Table: Semester 2, 2015 Examination Schedule for all ME (Electrical) Subjects. As there are generally 4 subjects per semester, the students confirmed that the overall number of exams was reasonable; the peers found this to be plausible. Prior to the final week of examinations, the students normally have one week to prepare for the examinations. However, the students complained that two examinations on one day are very demanding and put a lot of pressure on them. The peers understood that it is difficult for a centralized administration to accommodate the wishes of all stakeholders; still they encouraged the university to see if it was possible to avoid having more than one examination per day.

In all specializations the students in the final year have to write a so-called Capstone Project or Master's Advanced Software Project awarded with 25 credit points running over one full year. The exact implementation of this final thesis differs slightly from specialization to specialization. The peers learnt that the students are mostly working in groups and get a real project with a real client to work on. The group has to organize the implementation of the project and has to produce results according to the specifications provided by the client. The peers could see that this contributes to the development of transferable skills like team work and management skills. The peers welcomed this kind of group working experience but they wondered how the individual contribution of each team

member could be assessed. The students explained that each team members has to make a presentation on the final project and explain the individual contribution which is then assessed. However, the students admitted that the work was distributed unevenly among the team members and in some cases intercultural issues cropped up if foreign students could not speak proper English (compare criterion 1.4). The peers underlined that a final project was intended to prove that students have the knowledge and capacity to work autonomously on research and development tasks using scientific engineering methods. The peers were concerned that the final group project may not lead to this desired result because due to group dynamics the individual contribution to the final result may be strongly imbalanced. For this reason the peers recommended that students should implement final projects individually to foster the competence to work autonomously on research and development tasks using scientific engineering methods. Group work should be maintained in other projects.

The peers very much welcomed that additional moderation at the subject level takes place in those very large subjects where more than one tutor may have marked the same assignment. Where a student has been awarded a fail grade, the assessment items are re-marked by the second examiner. The peers were convinced that this approach should warrant a transparent and fair marking procedure, even though the statement of the students in the last TALQAC review report (see criterion 6) indicated that the marking results were not always plausible; the students during the audit could not confirm this complaint. Students who receive a failing grade in a subject are required to complete the subject the next time it is offered. The University does not offer re-sits or second examinations except under very special circumstances; however, a special re-sit is offered if only one subject of the final year has been failed. The University argues that it needs to be ascertained that students are really competent in each of the subjects and therefore the entire module has to be repeated. Students who experience unforeseen circumstances can apply for Special Consideration in accordance with the University's Special Consideration Policy. Students who are suffering from an ongoing medical condition that might limit their ability to complete an examination in the normal way can apply for special support during the examination. The exam correction times are clearly defined and are designed in a way that they avoid prolongation of the studies. All in all, the peers concluded that the rules are transparent and appropriate.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 3:

The panel was pleased about the positive response of the University of Melbourne regarding the suggestions made by the peers like increasing oral assessments in subjects, avoiding more than 1 examination in a day, to increase English language proficiency of

students and Individual (or in smaller groups) final year projects. However, the oral competences can still be further enhanced, as the peers stated.

Overall, the panel considered the expectations for criterion 3 to be partly met.

4. Resources

Criterion 4.1 Staff involved

Evidence:

- University of Melbourne, Melbourne School of Engineering, Self-assessment for the ASIIN-Seal Staff Handbook and chapter 4
- List of and information about research projects in the self-assessment report

Preliminary assessment and analysis of the peers:

The peers welcomed that the University of Melbourne submitted a staff handbook and acknowledged that the composition, scientific orientation and qualification of the teaching staff team are suitable for sustaining the degree. Additionally, the University of Melbourne explains its strategic plan which sees the number of staff and students within the School growing significantly over the next 10 years. The School intends to recruit 100 new teaching and research staff in addition to those necessary to replace retiring staff. In addition, another 33 research only staff will be appointed in fixed term positions and 31 casual staff will be appointed for teaching. All appointments will be made and in place by 2020. By 2020 equivalent full time student numbers is expected to increase by 40 % with most of this growth occurring at the Masters and PhD levels. The student/staff ration shall also fall from 27.3 in 2015 to 22.1 in 2025. The peers were impressed about these plans and took positive note of the fact that the student/staff ration will improve considerably in the next years. The University underlined that for one open position they received several hundreds of applications so that the University can select the best scholars; recruitment of specialized staff does not seem to be a problem as the peers understood. However, the lecturers complained that the number of technicians in the laboratories was insufficient and that teaching assistants had to help out in the laboratories. The peers pointed out that this had been a recommendation of the first accreditation already: technical staff in the laboratories should be enlarged to ensure the operability. The peers could not see that the situation in the laboratories has improved since the first accreditation. Additionally, the students indicated that the Master of Engineering runs with large cohorts and a number of large classes, in which it is common to have lectures for 300 students. The staff members noted that large class sizes are often difficult to manage, in par-

ticular running practical demonstrations. The peers agreed that the number of students in some subjects was high but still comparable to the situation at other international universities. However, the technical support staff needs improvement from the peer's point of view.

The University pointed out that the University is a research-intensive University with research strengths across all areas of research; the Melbourne School of Engineering is ranked Number 1 in Australia. The staff members explained that a semester of teaching changes with a semester of research; good research is support by incentives and promotion. The lecturers underlined that students are also involved in research projects although there is a growing interest among students to get involved in more practical and business related assignments. In summary, the staff members convinced the peers that the research and development activities carried out by the teaching staff were in line with and support the level of academic qualification aimed at.

Criterion 4.2 Staff development

Evidence:

- University of Melbourne, Melbourne School of Engineering, Self-assessment for the ASIIN-Seal Staff Handbook and chapter 4.2
- http://melbourne-cshe.unimelb.edu.au/ (Accessed 01.06.2016)

Preliminary assessment and analysis of the peers:

The peers positively noted that the "University's Centre for the Study of Higher Education" is designed for university staff seeking to develop their expertise, scholarship, and leadership skills in university teaching. The course combines research-based, theoretical seminars guided by higher education researchers, with practical exercises involving peer review of teaching and negotiated projects. The peers learnt from the webpage of the Center that it offers a broad variety of courses for professional development. All new teaching staff joining the School is required to enrol in the "Centre for the Study of Higher Education" within the first two years of their appointment. Additionally, the Engineering Learning Unit also supports the training of all casual staff including tutors and demonstrators. The "Tutor and Demonstrator Development" programme is run every semester for all new tutors and demonstrators who have never taught within the School before. Attendance for these staff members is mandatory. The peers welcomed that also casual staff is systematically involved in professional development and acknowledged that there are offers and support mechanisms available for teaching staff who wish to further develop their professional and teaching skills.

Criterion 4.3 Institutional environment, financial and physical resources

Evidence:

- University of Melbourne, Melbourne School of Engineering, Self-assessment for the ASIIN-Seal Staff Handbook and chapter 4.2

Preliminary assessment and analysis of the peers:

The peers learned that financial sources for the University of Melbourne originated primarily from tuition fees and research. The University added that the financial situation is very stable and convenient at the moment and pays for the expansion that is going to take place. The peers had no doubt that the available funds and equipment form a sound and solid basis for the degree programmes.

During the on-site inspection of laboratories and other facilities the panel noted that the laboratory infrastructure was all-in-all in a good condition. However, while for Electrical Engineering and Mechanical Engineering students had their own space and every team had their own desk and up-to-date equipment to work with, in Software Engineering the respective building had insufficient working places, as the students informed. But the software needed is provided by the University. Most students try to use open source software and they confirmed that the standard software is available on computers; however, special software may not be available for all students. For Electrical Engineering the peers wanted to know if a vector network analyzer, essential for Electrical Engineering, was available and learnt that it existed and was used for research purposes. The peers underlined that, from their point of view, the vector network analyzer needs also to be available for teaching. By the same token, the staff members added that equipment is available for research but not on a large scale for students. The University of Melbourne responded that it will re-develop the available space and obtain new space and equipment to accommodate the increasing number of staff members and growing need for additional space and equipment. The peers took positive note of this indication but underlined that the present situation of learning space and equipment is partly not satisfactory.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 4:

The peers welcomed the explanation that the Melbourne School of Engineering is now allowed to increase technical staff numbers and intends to employ more technical staff to complement the teaching of the program. The panel also appreciated the efforts of the Melbourne School of Engineering to alleviate some of the issues regarding software and learning space availability. The Melbourne School of Engineering underlined that a vector

network analyzer is used in the teaching of the Electrical Engineering program and available for students to use; it is also being used for research purposes. For Capstone Projects, more advanced Network Analyzers in the research laboratories are made available to students for their research projects. The peers thanked for this additional information.

Overall, the panel considered that criterion 4 was not yet fully met with regard to the mentioned aspects (technical staff, software).

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

Subject Descriptions including types of examinations:

- Master of Engineering (Electrical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Electrical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-electrical-business/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechanical): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechanical with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechanical-business/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Mechatronics): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-mechatronics/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Software): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software/degree-structure#degree-structure (Accessed 01.06.2016)
- Master of Engineering (Software with Business): http://www.eng.unimelb.edu.au/study/degrees/master-engineering-software-business/degree-structure#degree-structure (Accessed 01.06.2016)

Preliminary assessment and analysis of the peers:
The peers positively noted that the full set of subject descriptions is published for every specialization of the Master of Engineering. Hence, the subjects' descriptions are available for all interested stakeholders. The peers examined the subject descriptions of all seven specializations and noted that the modules have comprehensible names and identification numbers. The name of the coordinator and contact details are provided. If requirements (Prerequisites, Co requisites, Recommended Background Knowledge) for the successful participation in a module are necessary, this is clearly stated. The credit points, the overall time commitment and the contact time are properly subdivided into lectures, practice hour, overall time commitment; also the different types of teaching method become transparent in this section. The leaning outcomes are implicitly subdivided into knowledge, skills, and competences which is positively judged by the peers. Additionally, generic skills are outlined, explaining which additional non-technical skills shall be obtained in the respective module. The type of examination and the calculation of the assessment including weighting factor are very well described as the peers pointed out. Also a reading list is provided in the subject descriptions. The peers praised the high level of detailed information in the subject descriptions.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- University of Melbourne, Melbourne School of Engineering, Self-assessment for the ASIIN-Seal Annex 5 - Australian Higher Education Graduation Statement

Preliminary assessment and analysis of the peers:
The peers thanked the University of Melbourne for submitting the Australian Higher Education Graduation Statement which is issued after graduation. But the document does not provide information on the student's qualifications profile; the qualification profiles of the different specializations of the Master of Engineering need to be revised as stipulated under criterion 1.1. This should be taken into consideration for the Higher Education Graduation statement. The individual performance as well as the classification of the degree programme with regard to its applicable education system is properly outlined. The individual modules and the grading procedure on which the final mark is based are explained in a way which is clear for third parties. Statistical data as set forth in the ECTS User's Guide is not included to allow readers to categorise the individual result/degree.

Criterion 5.3 Relevant rules

Evidence:

- https://policy.unimelb.edu.au/ (Accessed 01.06.2016)

Preliminary assessment and analysis of the peers:
The peers verified that policies and procedures of the University of Melbourne can be found in the Melbourne Policy Library website. The website is open to all interested stakeholders. The peers confirmed that the rights and duties of both the higher education institution and students are clearly defined and binding. All relevant course-related information is available in the language of the degree programme and accessible for anyone involved. The peers welcomed that this document library had been introduced and considered this recommendation from the first accreditation as fulfilled.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 5:

The panel acknowledged the limitation of the university in amending an official, national document such as the AHEGS statement. Nevertheless, the panel considered the mention of programme-specific competences to be an essential feature of any such document to make it valuable and usable for external stakeholders and thereby facilitate mobility and transparency. The university was thus encouraged to explore possibilities to add such information in an easily readable manner for all stakeholders (e.g. as an annex to the statement).

Apart from this issue, the panel concluded that the expectations for this criterion were met.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- University of Melbourne, Melbourne School of Engineering, Self-assessment for the ASIIN-Seal Annex 5 - Australian Higher Education Graduation Statement
- Quality of Teaching and Learning Course Review Procedure: https://policy.unimelb.edu.au/MPF1197 (Accessed 01.06.2016)
- Quality of Teaching and Learning Subject Review Procedure https://policy.unimelb.edu.au/MPF1198 (Accessed 01.06.2016)
- UNIVERSITY OF MELBOURNE, Teaching and Learning Quality Assurance Committee, A committee of the Academic Board

http://about.unimelb.edu.au/__data/assets/pdf_file/0011/923789/TALQAC_ToRs_17-10-13_final.pdf (Accessed 01.06.2016)

Preliminary assessment and analysis of the peers:

The auditors learnt that the University of Melbourne applied a number of quality assurance processes at a University, School, Department and Subject level. All programmes are regularly reviewed by a committee of the Academic Board, the "Teaching and Learning Quality Assurance Committee"; besides this committee has the task to develop and review qualitative and quantitative indicators of performance of teaching and learning, to review reports and assessments of quality in teaching and learning and to monitor the quality and effectiveness of programmes. The University of Melbourne carries out the "Melbourne Experience Survey" which is a University of Melbourne survey which seeks to understand the current students' overall University experience as well as students' experience of their course. While 2010 results were less positive, 2011 the overall Satisfaction outcomes for the Master of Engineering were well above the faculty and university average, with the percentage rating "Very Good" or "Excellent". The Survey also captures qualitative student feedback on a range of topics; however, "Teaching Engagement" and "Course Organisation" rate comparatively poorly in this survey. It remained unclear to the peers which measures the University intends to take to adequately respond to this feedback. Nevertheless, the peers thought that this kind of university-wide survey was a good source of information to also compare the different Departments with each other and to understand whether an issue is a university-wide challenge or if it is limited to specific Departments only. The peers also praised the fact that "Industry Advisory Groups" have been formed for all the Departments. These groups provide insights on the strategic planning of the University; and teaching and research programmes (compare criterion 1.1).

Furthermore, the University reports about the "Subject Experience Survey" which is a survey undertaken each semester to record student's opinion on the quality of learning and teaching in their subjects. 10 standardized questions have to be scored on a 5-point scale assessing the "Subject Delivery Scale" and the "Student Learning Scale". The peers examined the standard questions that are mentioned in the Self-Assessment Report and doubted if these questions were suitable to receive a detailed and helpful feedback on the quality of learning and teaching. Additionally, the lecturers admitted that their evaluation results have to be within a certain threshold and if this is met, there is no feedback if the lecturers discuss the evaluation results with the students and whether they make any amendments based on the student feedback.

The peers welcomed the "Staff-Student Liaison Committees" for each discipline which typically meet twice a semester and provide feedback to the academic staff on subject-

level and programme-level issues. The students confirmed that this was the right platform to place complaints and make recommendations for improvement which are also taken into account by the respective heads of department. However, the students reported that particularly foreign students do not participate in student organisations and hence are not represented in the "Staff-Student Liaison Committee". The peers understood that it is the responsibility of the students themselves to voice their problems and issues but they also emphasised that the university should consider means to better integrate foreign students and encourage them to articulate their issues.

The peers confirmed that, apart from the "Subject Experience Survey", the methods employed and data analysed are suitable for the purpose and used to continue improving the degree programme, especially with a view to identifying and resolving weaknesses. But the peers underlined that the feedback loops could still be further improved; additionally, the University should consider appropriate measures to better integrate foreign students who due to cultural differences refrain from voicing out their issues.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 6:

The peers confirmed their recommendation to systematically close the feedback loops and involve all relevant stakeholders (e.g. graduates) in the quality management system. The peers welcomed that the University will be setting up working groups to develop strategies and mechanisms on how the integration of foreign students can be improved.

Apart from this, the panel considered criterion 6 to be fulfilled.

D Additional Documents

Before preparing their final assessment, the panel ask that the following missing or unclear information be provided together with the comment of the Higher Education Institution on the previous chapters of this report:

- D.1 Technical Specifications of the Specializations of the Master of Engineering
- D.2 Questionnaire of the teaching evaluation or any other document demonstrating a verification of workload-credit point relation

E Comment of the Higher Education Institution (15.08.2016)

The institution provided the following statement regarding the requested additional documents:

"Thank you for sending us the draft ASIIN Accreditation for Cluster C. We find the report very instructive and useful and we value the comments made by the peers. We thank the accreditation panel for taking time to review our programs and for the recommendations on what we can do to improve the quality of our graduates. We will do our best to implement the changes as we know it will only improve the student experience in the Melbourne School of Engineering.

Criterion 1.1 Objectives and learning outcomes of a degree programme (intended qualifications profile)

We agree that the learning objectives for the various specialisations on our website are very generic. The information on our public website are meant to be generic so that future students are able to understand what they are going to study. More details of the technical topics taught in the specialisations can be found in our handbook which is available online at https://handbook.unimelb.edu.au. The handbook entries for all programs in Cluster C can be found at:

- https://handbook.unimelb.edu.au/view/2016/%21H05-AA-SPC%2B1005 (for Electrical)
- https://handbook.unimelb.edu.au/view/2016/%21MC-ENG-SPC%2B1004 (for Electrical with business)
- https://handbook.unimelb.edu.au/view/2016/%21H05-AA-SPC%2B1008 (for Mechanical)
- https://handbook.unimelb.edu.au/view/2016/%21MC-ENG-SPC%2B1006 (for Mechanical with Business)
- https://handbook.unimelb.edu.au/view/2016/%21H05-AA-SPC%2B1010 (for Software)
- https://handbook.unimelb.edu.au/view/2016/%21MC-ENG-SPC%2B1005 (for Software with Business)

In section D1 of this report, we have said that we will be developing the "technical specialisations" for all the specialisations in the Master of Engineering. We will be publishing these "technical specialisations" on our websites so that it will be clear to potential em-

ployers and students what the graduates of each specialisations are capable of producing in the workplace.

We thank the peers for the positive comments on the importance we have placed on the development of ethics and professional skills (e.g. team membership, leadership and communications) in all our programs. We realise that this is an important aspect of all engineering programs and we have already made plans to strengthen this aspect of all our Master of Engineering specialisations. We plan to review the content the content of our core subject (for all specialisations), Engineering Practice and Communications (ENGR90021) to further emphasise the development of professional skills and also to insist on the teaching and assessment of professional skills in more subjects later in the Master of Engineering program.

Criterion 1.2 Name of the degree programme

The naming of all our different specialisations under the grouping of Master of Engineering is a long standing tradition in Australia. For the undergraduate programs in many other Australian universities, it is common to have Bachelor of Engineering (Mechanical), Bachelor of Engineering(Electrical) etc. We have just carried this naming convention to our graduate programs.

We agree with the peers that the naming convention of the "with Business" specialisations are consistent with the content of the curricula.

Criterion 1.3 Curriculum

We thank the peers for the generally positive comments on our curriculum of all our programs in Cluster C. We are happy to see that the peers found the module-objective matrix showing the alignment with the Subject-Specific Criteria (SSC) of ASIIN useful. We are also very glad to find out that the peers find that *the Master of Engineering (Electrical), Master of Engineering (Mechanical), Master of Engineering (Mechatronics), and Master of Engineering (Software) programs are designed in a way to develop the competences as exemplified in the Subject-Specific Criteria of ASIIN and consequently also fulfil the requirements of the EUR-ACE seal.*

"Field Theory" is taught in the subject ELEN30011 Electrical Device Modelling, which is a core subject in the first year of the ME(Electrical) and ME(Electrical with Business). In addition, students are exposed to the fundamentals of electromagnetism in the physics subjects they are expected to have as background and in the following elective subjects: "ELEN90074 Introduction to Power Engineering" and "ELEN90059 Lightwave Systems". We will examine making "Field Theory" more prominently in our course by developing a

new subject such as “Microwave Systems and Antennas” as we build our teaching cohort over the coming years.

Criterion 1.4 Admission requirements

We can confirm that the admission requirements outlined in this section is correct. The Master of Engineering is designed as a 3 year program. To gain entry into this program, students must have completed an undergraduate degree with relevant subject (units) in science and maths. Students who have successfully completed a cognate undergraduate degree (Bachelor of Science or Bachelor of Engineering in from a good university) will be awarded 1 year (100 points) of credit and can complete the Master of Engineering in 2 years.

As there are students from different countries with distinctive cultural background enrolled in the Master of Engineering, we are aware that there are issues with students with different ability in communicating in English. We have begun thinking about what we should do to overcome this problem. Some of the options we are considering are:

- Increase our English language entry requirement (increase the IELTS and TOEFL scores)
- Ask that all foreign students take an English diagnostic test when they arrive at the University of Melbourne. Students that score below a certain threshold will be offered an English language course.
- Include a hurdle component based on the English language for our compulsory *Engineering Practice and Communication* (ENGR90021) subject.

We will be having discussions and consultations in 2016 and will look at implementing some of these ideas (and also maybe some new ones) in 2017/2018.

Criterion 2.1 Structure and modularity

We are pleased to see that the peers are happy with the structure and flexibility of our programs. We aim to maintain the ability for the students to seamlessly switch between the “with Business” and the “technical” streams. This will provide options for the students, allowing them to delay the decision on which program (“with Business or “technical”) they would like to pursue.

With regards to the comment on STEP, we are current reviewing the way we deliver and teach professional skills (of which communication and English language is a big component) in the Master of Engineering. It is anticipated that there will be more emphasis on communication and language skills in the future and the next version of STEP will reflect this line of thinking.

We also proud that many of our students undertake some of their studies in other institutions around the world. We believe that studying in different institutions will enrich the student experience and lead to the student being a much better graduate. We have set up mechanisms to encourage students to participate in our mobility programs. We are glad to see that the peers recognize and encourage this initiative.

Criterion 2.2 Workload and credit points

During the last accreditation visit, we were advised to write the handbook entry for all our subjects to reflect the fact that our students typically commit about 200 hours per semester for a 12.5 point Master's level (level 9) subject (or unit). This 200 hours would include contact hours with faculties and also non-contact (study time) hours where students are supposed spend on personal study and completing assignments, laboratory work, preparing for oral presentations etc. We have since done that and now all the handbook entries for our subjects clearly communicate to students that the expected hours of commitment for a 12.5 point subject is 200 hours per semester. We have also asked our academic staff that when they teach a 12.5 point subject, the assessment for that subject and the level of difficulty of the subject is such that a typical student would require about 200 hours to comprehend.

Anecdotal feedback from our students is that we have got this about right. During our staff-student liaison meetings, students are asked about their workload and none of them have disputed/challenged the handbook entry of 200 hours per 12.5 point subject. We believe that the students interviewed by the peers also communicated this fact.

At this stage, it is difficult to provide proof. In future, we would be willing to implement any suggestion of a mechanism that show that our students commit close to 200 hours per 12.5 point subject. One possible mechanism is to include a question about workload in the official end of semester student survey.

Criterion 2.3 Teaching methodology

As mentioned in the report, we apply many different teaching styles in the delivery of course material. The teaching style would depend on the content of the subject and also the delivery style of the individual lecturer. Lately we are utilizing more and more project based learning (PBL) in many of our programs and it is positive to hear that students appreciate this style of learning.

Given our student background, we agree that language and intercultural issues could hinder the effectiveness of PBL and we would be implementing mechanisms to overcome these problems. We are considering different options to overcome the language barrier in Criterion 1.4. As for intercultural issues, we plan to address this matter in our revised

compulsory *Engineering Practice and Communication* (ENGR90021) subject. We plan to have a component teaching students to be more aware of cultural background and provide them with strategies on being more effective in an intercultural group.

Criterion 2.4 Support and advise

As noted by the peers, the "Stop 1" concept is new and it is much too early to judge whether it is working well or not. We hasten to add that the concept of having one place for students to go for assistance and for all administrative matters is a good idea. No doubt, problems will arise but we will be working with University administration to solve them as quickly as possible. At this stage, we can say that there are small issues (e.g. confusion of where a students need to go for advise, who is giving permission for what etc) but in general, we feel that the "Stop 1" idea is proving to be a good one.

Criterion 3 Exams: System, concept & implementation

We are pleased to hear that "*The peers analyzed examinations and final theses provided by the University and concluded that they were of adequate standard to assess if the intended learning outcomes had been achieved."* We agree that all the recommendations made by the peers below

- More oral assessments in our subjects
- Avoid more that 1 examination in a day
- Increase English language proficiency of our students (already addressed in Criterion 1.4)
- Individual (or in smaller groups) final year projects

are excellent suggestions. We will endeavor to make it happen in the coming years. One of the issues with the last dot point is having sufficient number of staff to supervise the final year projects. But as the peers are aware (see Criterion 4.1), we are in the process of employing more academic staff and this will enable final year projects that will be carried out in smaller groups.

Criterion 4.1 Staff involved

The Melbourne School of Engineering is in the process of hiring more academic staff and this will improve our staff/student ratio from 27.3 in 2015 to 22.1 in 2025. Having more staff will allow us to supervise smaller final year project groups (see Criterion 3).

As for technical staff, the University has recently undergone a restructure of all non-academic (which includes technical) staff. The Melbourne School of Engineering was not allowed to increase technical staff numbers. Now that the restructuring is over, we are in a position to employ more technical staff to complement the teaching of our program. The need for more technical staff is also a recommendation from our curriculum review

(conducted during the similar time as the ASIIN Accreditation visit). We will be setting up working groups to work out strategies and propose mechanisms to implement the recommendations from ASIIN and our own curriculum review. The working groups will commence meeting later this year and the implementations are expected to occur in 2017/2018.

Criterion 4.2 Staff development

As noted by the peers we have training program for our tutors every semester. Feedback from the participants of this program has been very positive. In addition, all our new teaching academic staff are required to undergo a program run by the "University's Centre for the Study of Higher Education".

As noted by the peers, our student survey results show that our teaching quality of improved over the last few years. We are happy to see this statistic and we will aim to continue to improve our teaching and the student experience in the coming years.

Criterion 4.3 Institutional environment, financial and physical resources

We agree with the peers that there is a shortage of computer lab space, especially for Software engineering students. However, the rapid changes in the ownership of relatively powerful laptop computers by students, combined with the licensing arrangements the University has in place should alleviate some of this issue. There are some software that the University have bought that is free to download for students. The list is available at http://studentit.unimelb.edu.au/study/software-locations#downloadable-software and includes Matlab and its toolboxes, Autodesk products and Microsoft Office among others.

A vector network analyzer, is indeed used in the teaching of our Electrical Engineering program and available for students to use. Electrical Engineering uses the N9914A FieldFox Handheld RF Analyzer, 6.5 GHz, in relevant teaching laboratories of ELEN30011 Electrical Device Modelling and ELEN90062 High Speed Electronics. In addition, for Capstone Projects, more advanced Network Analyzers in our research laboratories are made available to students for their research projects, as necessary.

Criterion 5.1 Module descriptions

Over the years, we have spent a lot of time writing details and giving student as much information about each modules as possible. We now find that students are well informed on what they need to do when they enroll for each subjects. We thank the peers for praising us on the high level of detailed information in the subject descriptions.

Criterion 5.2 Diploma and Diploma Supplement

We agree with the peers that the current description of our graduates in the Australian Higher Education Graduation Statement (AHEGS) is quite generic and more detail information would be helpful. We have conducted a thorough investigation on how we can give more material in the AHEGS. However, we have been informed that we are not legally allowed to put more information into the AHEGS as it is a document produced by the Australian Government.

Having said that, we are in full agreement that a qualification profile for each specialisations of the Master of Engineering would be useful for employers, potential and current students, and our colleagues from other institutions. We will be developing the qualification profiles and putting it up on our website for easy access to anyone who might be interested to read them.

Criterion 5.3 Relevant rules

We are happy to hear that the peers find our documentation of the rules and policies of our programs to be easily accessible, clear and concise. We are also glad to hear that the peers now consider that the recommendation from the first accreditation has been fulfilled.

Criterion 6 Quality management: quality assessment and development

We are glad that the peers noted that the overall satisfaction of our Master of Engineering program has improved and we also agree with the peers that the "Industry Advisory Groups" have been very useful for our departments. We will also continue to have the "Staff-Student Liaison Committees" meetings regularly as we agree with the peers that this provides very informative feedback on how we can improve our teaching and also course structure/design.

We note the issue with foreign students and we agree with the recommendation by the peers that it is critical that we do everything we can to better integrate them into our programs. This issue arose as well in our curriculum review and we will be setting up working groups later this year to come up with strategies and mechanisms on how we can address this problem. Implementation is expected to occur in 2017/2018.

F Summary: Assessment of the peers

The peers recommend the award of the seals as follows:

Studiengang	ASIIN-Siegel	Fachlabel	Akkreditierung bis max.
Master of Engineering (Electrical)	Mit Auflagen	EUR-ACE®	30.09.2023
Master of Engineering (Electrical with Business)	Mit Auflagen	EUR-ACE®	30.09.2021
Master of Engineering (Mechanical)	Mit Auflagen	EUR-ACE®	30.09.2023
Master of Engineering (Mechanical with Business)	Mit Auflagen	EUR-ACE®	30.09.2021
Master of Engineering (Mechatronics)	Mit Auflagen	EUR-ACE®	30.09.2023
Master of Engineering (Software)	Mit Auflagen	Euro-Inf®	30.09.2023
Master of Engineering (Software with Business)	Mit Auflagen	Euro-Inf®	30.09.2021

Requirements

For all Specializations of the Master of Engineering

A 1. (ASIIN 1.1) Revise the educational objectives/learning outcomes so as to describe the academic, subject-specific and professional classification of the qualifications gained in the core disciplines.

A 2. (ASIIN 1.3) Ascertain that the admission rules ensure that students, who are admitted, have an appropriate level of English to follow the classes and are able to express themselves orally and in writing.

A 3. (ASIIN 5.2) Ensure that the Diploma Supplement contains detailed information about the educational objectives, intended learning outcomes as well statistical data to allow readers to categorise the individual results.

Electrical Engineering

A 4. (ASIIN 1.3, 5.1) Rewrite the module descriptions which include field theory to make transparent in which modules field theory is included and to what extent it is being taught. Check if field theory may have a stronger focus in the curriculum.

Recommendations

E 1. (ASIIN 2.3) It is recommended to introduce intercultural coaching support especially for student group work.

E 2. (ASIIN 3) It is recommended that students should implement final projects individually to foster the competence to work autonomously on research and development tasks using scientific engineering methods.

E 3. (ASIIN 3) It is recommended to introduce more assignments with oral student presentation and oral exams to reach the intended learning outcomes.

E 4. (ASIIN 4.1/4.3) It is recommended to enhance the student learning space and to have more technical assistants.

E 5. (ASIIN 6.1) It is recommended to systematically close the feedback loops and involve all relevant stakeholders (e.g. graduates) in the quality management system. Particularly the integration of foreign students should be improved. Additionally, it is recommended to systematically verify if the actual student workload and the credit points are in line.

Electrical Engineering

E 6. (ASIIN 4.3) It is recommended to make the vector network analyzer available to both teaching and research and to encourage its usage in both areas.

Assessment of the Technical Committees

Technical Committee 01 – Mechanical Engineering / Process Engineering (06.09.2016)

The Technical Committee 1 discussed the procedure.

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee could comprehend the requirements and recommendations; however, the Technical Committee suggests making an addition to recommendation number 1 dealing with the introduction of intercultural coaching support especially for student group work. The Technical Committee underlined that coaching support would not suffice because the challenge is the composition of student working groups. The Technical Committee highlighted that the recommendation should also indicate that the ethnic diversity of students should be properly reflected in the working groups. Additionally, the Technical Committee suggests splitting up Recommendation number 5 and turning it into two separate recommendations. Apart from this the Technical Committee fully supports the proposed requirements and recommendations of the peers.

Assessment and analysis for the award of the EUR-ACE® Label:

The Technical Committee deems that the intended learning outcomes of the degree programmes do comply with the engineering specific part of Subject-Specific Criteria of the Technical Committee 01.

The Technical Committee 01 recommends the award of the seals as follows:

Degree Programme	**ASIIN seal**	**Subject-specific Label**	**Maximum duration of accreditation**
Master of Engineering (Mechanical)	With requirements	EUR-ACE®	30.09.2023
Master of Engineering (Mechanical with Business)	With requirements	EUR-ACE®	30.09.2021
Master of Engineering (Mechatronics)	With requirements	EUR-ACE®	30.09.2023

Requirements

For all Specializations of the Master of Engineering

A 1. (ASIIN 1.1) Revise the educational objectives/learning outcomes so as to describe the academic, subject-specific and professional classification of the qualifications gained in the core disciplines.

A 2. (ASIIN 1.3) Ascertain that the admission rules ensure that students, who are admitted, have an appropriate level of English to follow the classes and are able to express themselves orally and in writing.

A 3. (ASIIN 5.2) Ensure that the Diploma Supplement contains detailed information about the educational objectives, intended learning outcomes as well statistical data to allow readers to categorise the individual results.

Recommendations

E 1. (ASIIN 2.3) It is recommended to introduce intercultural coaching support especially for student group work. Furthermore it is recommended to observe that the ethnic diversity of students is properly reflected in the working groups

E 2. (ASIIN 3) It is recommended that students should implement final projects individually to foster the competence to work autonomously on research and development tasks using scientific engineering methods.

E 3. (ASIIN 3) It is recommended to introduce more assignments with oral student presentation and oral exams to reach the intended learning outcomes.

E 4. (ASIIN 4.1/4.3) It is recommended to enhance the student learning space and to have more technical assistants.

E 5. (ASIIN 6.1) It is recommended to systematically close the feedback loops and involve all relevant stakeholders (e.g. graduates) in the quality management system. Particularly the integration of foreign students should be improved. Additionally, it is recommended to systematically verify if the actual student workload and the credit points are in line.

Technical Committee 02 – Electrical Engineering (16.09.2016)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses requirement 4 ("module descriptions" in case of the Master programme Electrical Engineering). It suggests clarifying that the recommendation refers specifically to the "Electromagnetic" field theory, but not field theory in general. It also concludes that the second sentence of the requirement ("Check if field theory may have a stronger focus in the curriculum") does not explicitly require the university to do something, but more or less leaves it to the university to monitor its curriculum concerning the share of field theory it entails, and also to consider whether this proportion is deemed sufficient. This sounds like a recommendation at best. However, since peers apparently have come to the conclusion that electromagnetic field theory is sufficiently dealt with in the programme (although in modules one would not have expected), from the perspective of the Technical Committee no further action is needed in this respect. Accordingly, it suggests deleting the above cited phrase.

As to requirement 2, the Technical Committee proposes an editorial modification for the purpose of simplification.

The Technical Committee agrees with the Technical Committee 01 that recommendation 5 entails two separate recommendations and should be split up, so that the reference to a systematic monitoring of the students' workload forms a separate recommendation (now recommendation 5 and 6).

Finally, the Technical Committee argues that the reference to the vector network analyzer in recommendation 7 should be exemplary and suggests a modification of the recommendation in this sense.

Apart from that the Technical Committee fully agrees with the recommended resolution of the expert panel.

Analyse und Bewertung zur Vergabe des EUR-ACE® Labels:

The Technical Committee deems that the intended learning outcomes of the degree programmes do comply with the engineering specific part of its Subject-Specific Criteria (SSC).

The Technical Committee recommends the award of the seals as follows:

Degree programme	ASIIN-Seal	Subject-specific Label	Maximum duration of accreditation
Master of Engineering (Electrical)	With requirements for one year	EUR-ACE®	30.09.2023
Master of Engineering (Electrical with Business)	With requirements for one year	EUR-ACE®	30.09.2021
Master of Engineering (Mechatronics)	With requirements for one year	EUR-ACE®	30.09.2023

Requirements

For all Specializations of the Master of Engineering

A 1. (ASIIN 1.1) Revise the educational objectives/learning outcomes so as to describe the academic, subject-specific and professional classification of the qualifications gained in the core disciplines.

A 2. (ASIIN 1.3) Ensure that students, who are admitted, have an appropriate level of English to follow the classes and are able to express themselves orally and in writing.

A 3. (ASIIN 5.2) Ensure that the Diploma Supplement contains detailed information about the educational objectives, intended learning outcomes as well statistical data to allow readers to categorize the individual results.

Electrical Engineering

A 4. (ASIIN 1.3, 5.1) Rewrite the module descriptions with respect to electromagnetic field theory to make transparent in which modules electromagnetic field theory is included and to what extent it is being taught.

Recommendations

E 1. (ASIIN 2.3) It is recommended to introduce intercultural coaching support especially for student group work.

E 2. (ASIIN 3) It is recommended that students should implement final projects individually to foster the competence to work autonomously on research and development tasks using scientific engineering methods.

E 3. (ASIIN 3) It is recommended to introduce more assignments with oral student presentation and oral exams to reach the intended learning outcomes.

E 4. (ASIIN 4.1, 4.3) It is recommended to enhance the student learning space and to have more technical assistants.

E 5. (ASIIN 6.1) It is recommended to systematically close the feedback loops and involve all relevant stakeholders (e.g. graduates) in the quality management system. Particularly the integration of foreign students should be improved.

E 6. It is recommended to systematically verify if the actual student workload and the credit points are in line.

Electrical Engineering

E 7. (ASIIN 4.3) It is recommended to broaden the measuring instrumentation such as the vector network analyzer for both teaching and research and to encourage its usage in both areas.

Technical Committee 04 – Informatics (07.09.2016)

Assessment and analysis for the award of the ASIIN seal:

The technical committee discusses the requirement A2 as the English language entry requirement for non-native speakers seems adequate. The technical committee is aware that English competencies approved in a test (TOEFL/TOIC etc.) may differ from the actual oral and writing competencies which may impact the quality of group work and causes imbalances in the contributions of students. However, the proof of English language competencies by an international recognised test seems to be one of the most objective tools for the HEI to assess the English language abilities of prospective students. In addition, the HEI plans to admit students from different countries in order to balance the student body. The HEI should be given time to assess if this action already reduces the number of students with less than appropriate English language competencies. Therefore, the technical committee recommends to change the intended requirement A2 to a corresponding recommendation (see E1 below).

Assessment and analysis for the award of the Euro-Inf® Label:

The Accreditation Commission deems that the intended learning outcomes of the degree programme comply with the Subject-Specific Criteria of the Technical Committee 04 - Informatics.

The TC 04 – Computer Science/Informatics recommends the award of the seals as follows:

Studiengang	**ASIIN-Siegel**	**Fachlabel**	**Akkreditierung bis max.**
Master of Engineering (Software)	Mit Auflagen	Euro-Inf®	30.09.2023
Master of Engineering (Software with Business)	Mit Auflagen	Euro-Inf®	30.09.2021

Requirements

For all Specializations of the Master of Engineering

A 1. (ASIIN 1.1) Revise the educational objectives/learning outcomes so as to describe the academic, subject-specific and professional classification of the qualifications gained in the core disciplines.

A 2. (ASIIN 5.2) Ensure that the Diploma Supplement contains detailed information about the educational objectives, intended learning outcomes as well statistical data to allow readers to categorize the individual results.

Electrical Engineering

A 3. (ASIIN 1.3, 5.1) Rewrite the module descriptions which include field theory to make transparent in which modules field theory is included and to what extent it is being taught. Check if field theory may have a stronger focus in the curriculum.

Recommendations

E 1. (ASIIN 1.3.) It is recommended to assure that students admitted have the appropriate level of English to follow the classes and are able to express themselves orally and in writing.

E 2. (ASIIN 2.3) It is recommended to introduce intercultural coaching support especially for student group work.

E 3. (ASIIN 3) It is recommended that students should implement final projects individually to foster the competence to work autonomously on research and development tasks using scientific engineering methods.

E 4. (ASIIN 3) It is recommended to introduce more assignments with oral student presentation and oral exams to reach the intended learning outcomes.

E 5. (ASIIN 4.1/4.3) It is recommended to enhance the student learning space and to have more technical assistants.

E 6. (ASIIN 6.1) It is recommended to systematically close the feedback loops and involve all relevant stakeholders (e.g. graduates) in the quality management system. Particularly the integration of foreign students should be improved. Additionally, it is recommended to systematically verify if the actual student workload and the credit points are in line.

Technical Committee 06 – Industrial Engineering (08.09.2016)

Assessment and analysis for the award of the ASIIN seal:

The technical committee discusses the procedure. It judges the assessment of the peers as well as the proposed requirements and recommendations to be adequate.

Assessment and analysis for the award of the EUR-ACE® Label:

The Technical Committee deems that the intended learning outcomes of the degree programmes Master of Engineering (Electrical with Business) and Master of Engineering (Mechanical with Business) do comply with the engineering specific part of Subject-Specific Criteria of the Technical Committee 06.

The Technical Committee 06 recommends the award of the seals as follows:

Studiengang	ASIIN-Siegel	Fachlabel	Akkreditierung bis max.
Master of Engineering (Electrical with Business)	Mit Auflagen	EUR-ACE®	30.09.2021
Master of Engineering (Mechanical with Business)	Mit Auflagen	EUR-ACE®	30.09.2021
Master of Engineering (Software with Business)	Mit Auflagen	Euro-Inf®	30.09.2021

Requirements

For all Specializations of the Master of Engineering

A 1. (ASIIN 1.1) Revise the educational objectives/learning outcomes so as to describe the academic, subject-specific and professional classification of the qualifications gained in the core disciplines.

A 2. (ASIIN 1.3) Ascertain that the admission rules ensure that students, who are admitted, have an appropriate level of English to follow the classes and are able to express themselves orally and in writing.

A 3. (ASIIN 5.2) Ensure that the Diploma Supplement contains detailed information about the educational objectives, intended learning outcomes as well statistical data to allow readers to categorize the individual results.

Electrical Engineering

A 4. (ASIIN 1.3, 5.1) Rewrite the module descriptions which include field theory to make transparent in which modules field theory is included and to what extent it is being taught. Check if field theory may have a stronger focus in the curriculum.

Recommendations

E 1. (ASIIN 2.3) It is recommended to introduce intercultural coaching support especially for student group work. The Furthermore it is recommended to observe that the ethnic diversity of students is properly reflected in the working groups.

E 2. (ASIIN 3) It is recommended that students should implement final projects individually to foster the competence to work autonomously on research and development tasks using scientific engineering methods.

E 3. (ASIIN 3) It is recommended to introduce more assignments with oral student presentation and oral exams to reach the intended learning outcomes.

E 4. (ASIIN 4.1/4.3) It is recommended to enhance the student learning space and to have more technical assistants.

E 5. (ASIIN 6.1) It is recommended to systematically close the feedback loops and involve all relevant stakeholders (e.g. graduates) in the quality management system. Particularly the integration of foreign students should be improved.

E 6. It is recommended to systematically verify if the actual student workload and the credit points are in line.

Electrical Engineering

E 7. (ASIIN 4.3) It is recommended to make the vector network analyzer available to both teaching and research and to encourage its usage in both areas.

G Decision of the Accreditation Committee (30.09.2016)

Assessment and analysis for the award of the subject-specific ASIIN seal:

The Accreditation Commission accepts the editorial changes for requirement number 2, 4 and recommendation number 7 as proposed by the Technical Committee 2 – Electrical Engineering. The Accreditation Commission accepts the addition of the Technical Committee 1 – Mechanical Engineering for recommendation number 1. Except from these minor changes the Commission fully accepts the assessment of the peers.

Assessment and analysis for the award of the EUR-ACE® Label:

The Accreditation Commission deems that the intended learning outcomes of the degree programmes do comply with the engineering specific parts of Subject-Specific Criteria of the Technical Committees 01, 02 and 06 .

Assessment and analysis for the award of the Euro-Inf® Label:

The Accreditation Commission deems that the intended learning outcomes of the degree programmes do comply with the Subject-Specific Criteria of the Technical Committee 04 - Informatics.

The Accreditation Commission for Degree Programmes decides to award the following seals:

Degree Programme	**ASIIN seal**	**Subject-specific Label**	**Maximum duration of accreditation**
Master of Engineering (Electrical)	with requirements for one year	EUR-ACE®	30.09.2023
Master of Engineering (Electrical with Business)	with requirements for one year	EUR-ACE®	30.09.2021
Master of Engineering (Mechanical)	with requirements for one year	EUR-ACE®	30.09.2023
Master of Engineering (Mechanical with Business)	with requirements for one year	EUR-ACE®	30.09.2021
Master of Engineering (Mechatronics)	with requirements for one year	EUR-ACE®	30.09.2023
Master of Engineering (Software)	with requirements for one year	Euro-Inf®	30.09.2023

Degree Programme	ASIIN seal	Subject-specific Label	Maximum duration of accreditation
Master of Engineering (Software with Business)	with requirements for one year	Euro-Inf®	30.09.2021

Requirements

For all Specializations of the Master of Engineering

A 1. (ASIIN 1.1) Revise the educational objectives/learning outcomes per sub-discipline so as to describe the academic, subject-specific and professional classification of the qualifications gained in the core disciplines.

A 2. (ASIIN 1.3) Ensure that students, who are admitted, have an appropriate level of English to follow the classes and are able to express themselves orally and in writing.

A 3. (ASIIN 5.2) Ensure that the Diploma Supplement contains detailed information about the educational objectives, intended learning outcomes as well statistical data to allow readers to categorize the individual results.

Electrical Engineering

A 4. (ASIIN 1.3, 5.1) Rewrite the module descriptions with respect to electromagnetic field theory to make transparent in which modules electromagnetic field theory is included and to what extent it is being taught.

Recommendations

E 1. (ASIIN 2.3) It is recommended to introduce intercultural coaching support especially for student group work. Furthermore it is recommended to observe that the ethnic diversity of students is properly reflected in the working groups.

E 2. (ASIIN 3) It is recommended that students should implement final projects individually to foster the competence to work autonomously on research and development tasks using scientific engineering methods.

E 3. (ASIIN 3) It is recommended to introduce more assignments with oral student presentation and oral exams to reach the intended learning outcomes.

E 4. (ASIIN 4.1/4.3) It is recommended to enhance the student learning space and to have more technical assistants.

E 5. (ASIIN 6.1) It is recommended to systematically close the feedback loops and involve all relevant stakeholders (e.g. graduates) in the quality management system. Particularly the integration of foreign students should be improved.

E 6. (ASIIN 6.1) It is recommended to systematically verify if the actual student workload and the credit points are in line.

Electrical Engineering

E 7. (ASIIN 4.3) It is recommended to broaden the measuring instrumentation such as the vector network analyzer for both teaching and research and to encourage its usage in both areas.

H Fulfilment of Requirements: Decision of the Accreditation Committee (29.09.2017)

Requirements

For all Specializations of the Master of Engineering

A 1. (ASIIN 1.1) Revise the educational objectives/learning outcomes per sub-discipline so as to describe the academic, subject-specific and professional classification of the qualifications gained in the core disciplines.

Initial Treatment	
Peers	fulfilled Justification: The educational objectives/learning outcomes per sub-discipline have been published in the subject specific handbooks on the university webpages. The response letter of the university points out how the respective short paragraphs will be extended to satisfy the ASIIN requirement for each of the seven specializations of the Master of Engineering programme. The peers conclude that the suggested changes are adequate.
TC 01	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.
TC 02	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.
TC 04	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.
TC 06	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.

A 2. (ASIIN 1.3) Ensure that students, who are admitted, have an appropriate level of English to follow the classes and are able to express themselves orally and in writing.

Initial Treatment	
Peers	fulfilled Justification: The response letter of the university points out that the formal English language requirements set forth by the School of Engineering are consistent with the university as well as with other engineering schools in Australia. It is further elaborated that there is solid English language support installed in some of the subjects of the curriculum of which students must choose at least one. In addition, a new commission, the English Standards Working Group has been established at the university in 2017 to monitor and support English language development of foreign students at the university. The peers comprehend that the School of Engineering is fully aware of the English language problem it is facing and has taken reasonable measures to deal with it successfully.
TC 01	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.
TC 02	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.
TC 04	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.
TC 06	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.

A 3. (ASIIN 5.2) Ensure that the Diploma Supplement contains detailed information about the educational objectives, intended learning outcomes as well statistical data to allow readers to categorize the individual results.

Initial Treatment	
Peers	fulfilled Justification: The response letter of the university explains that governmental regulations prohibit them from including the required information in the documents corresponding to the Diploma Supplements. Instead, they have proposed to include a statement with a link to a university webpage where this information is available and archived for future references from prospective employers or graduates. The peers conclude that this solution is acceptable.
TC 01	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.

TC 02	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.
TC 04	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.
TC 06	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.

Electrical Engineering

A 4. (ASIIN 1.3, 5.1) Rewrite the module descriptions with respect to electromagnetic field theory to make transparent in which modules electromagnetic field theory is included and to what extent it is being taught.

Initial Treatment	
Peers	fulfilled Justification: The peers can see that the module descriptions have been revised and clearly indicate where electromagnetic field theory is included. The peers conclude that the requirement is fulfilled now.
TC 01	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.
TC 02	fulfilled Vote: unanimous Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.
TC 04	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.
TC 06	fulfilled Justification: The Technical Committee acknowledges the assessment of the peers and agrees to this judgement.

Decision of the AC Programmes on 29.09.2017:

Degree Programme	ASIIN seal	Subject-specific Label	Maximum duration of accreditation
Master of Engineering (Electrical)	All requirements fulfilled	EUR-ACE®	30.09.2023
Master of Engineering (Electrical with Business)	All requirements fulfilled	EUR-ACE®	30.09.2021
Master of Engineering (Mechanical)	All requirements fulfilled	EUR-ACE®	30.09.2023
Master of Engineering (Mechanical with Business)	All requirements fulfilled	EUR-ACE®	30.09.2021
Master of Engineering (Mechatronics)	All requirements fulfilled	EUR-ACE®	30.09.2023
Master of Engineering (Software)	All requirements fulfilled	Euro-Inf®	30.09.2023
Master of Engineering (Software with Business)	All requirements fulfilled	Euro-Inf®	30.09.2021

I Programme objectives and learning outcomes of the Master of Engineering and Curricula

The Master of Engineering programmes are entry-to-practice degrees designed to produce engineering graduates who are ready and able to work in a range of industries both in Australia and internationally. The ME programmes have as their objectives that graduates should:

1. have a sound fundamental understanding of the scientific principles underlying technology;
2. have acquired the educational and professional standards of the professional institutions and boards with which the School's courses are accredited;
3. possess a broad knowledge base of their chosen discipline, and of other disciplines so as to facilitate effective communication with those other professionals with whom engineers routinely communicate;
4. understand the basic principles underlying the management of physical, human and financial resources;
5. have acquired the mathematical and computational skills necessary for the solution of theoretical and practical problems for further professional development and for meeting future changes in technology;
6. possess analytical, problem-solving and, where relevant, design skills, including those appropriate for sustainable development;
7. have verbal and written communication skills that enable them to make a meaningful contribution to the changes facing our society;
8. have developed professional ethics and responsibility towards the profession and the community;
9. have an appreciation of the interpersonal and management skills required by engineers in undertaking professional activities; and.
10. understand the social, cultural, global and environmental responsibilities of the professional engineer, and the need for sustainable development.

These intended learning outcomes are listed in the Student Handbook, an on-line resource available to all students and staff.

In addition, the School's programmes seek to satisfy and exceed the Stage 1 Competencies of Engineers Australia. These competencies are:

1. Knowledge and Skills Base

1.1. Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline.

1.2. Conceptual understanding of the, mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline.

1.3. In-depth understanding of specialist bodies of knowledge within the engineering discipline.

1.4. Discernment of knowledge development and research directions within the engineering discipline.

1.5. Knowledge of contextual factors impacting the engineering discipline.

1.6. Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline.

2. Engineering Application Ability

2.1. Application of established engineering methods to complex engineering problem solving.

2.2. Fluent application of engineering techniques, tools and resources.

2.3. Application of systematic engineering synthesis and design processes.

2.4. Application of systematic approaches to the conduct and management of engineering projects.

3. Professional and Personal Attributes

3.1. Ethical conduct and professional accountability

3.2. Effective oral and written communication in professional and lay domains.

3.3. Creative, innovative and pro-active demeanour.

3.4. Professional use and management of information.

3.5. Orderly management of self and professional conduct.

3.6. Effective team membership and team leadership.

1. Master of Engineering (Electrical)

Students graduating from any 3-year degree program who have completed the equivalent of 25 points of first year mathematics and 25 points of first year physics (or equivalent science) may be admitted to the 300 point, 3 year Master of Engineering (Electrical) program.

This program received EUR-ACE Accreditation at Second Cycle from ASIIN in 2011.

YEAR 1					
Semester 1			*Semester 2*		
ENGR90021	Engineering Practice and Comm.	12.5	ELEN20005	Foundations of Electrical Networks	12.5
ELEN30009	Electrical Network Analysis & Design	12.5	ELEN30011	Electrical Device Modelling	12.5
ELEN30010	Digital System Design	12.5	ELEN30012	Signals and Systems	12.5
MAST20029	Engineering Mathematics	12.5	COMP20005	Engineering Computation	12.5

YEAR 2					
Semester 3			*Semester 4*		
ELEN90056	Electronic Circuit Design	12.5	ELEN30013	Electronic System Implementation	12.5
ELEN90054	Probability and Random Models	12.5	ELEN90057	Communication Systems	12.5
ELEN90055	Control Systems	12.5	ELEN90058	Signal Processing	12.5
	Approved Elective	12.5	ELEN90066	Embedded System Design	12.5

YEAR 3					
Semester 5			*Semester 6*		
ELEN90067	Electrical Engineering Capstone Project	25.0			
	Electrical Engineering Elective	12.5		Electrical Engineering Elective	12.5
	Electrical Engineering Elective	12.5		Electrical Engineering Elective	12.5
	Approved Elective	12.5		Approved Elective	12.5

Electrical Engineering Electives		
ELEN90059	Lightwave Systems	12.5
ELEN90060	Power Systems Analysis	12.5
ELEN90051	Advanced Communication Systems	12.5
ELEN90052	Advanced Signal Processing	12.5
ELEN90074	Introduction to Power Engineering	12.5

Electrical Engineering Electives		
ELEN90061	Communication Networks	12.5
ELEN90062	High Speed Electronics	12.5
ELEN90064	Advanced Control Systems	12.5
ELEN90053	Electronic System Design	12.5
ELEN90075	Power Electronics	12.5

Common Engineering Subject
Core Discipline Subject
Elective Discipline Subject
Supporting Science Subject
Core Engineering Business Subject

2. Master of Engineering (Electrical with Business)

Students graduating from any 3-year degree program who have completed the equivalent of 25 points of first year mathematics and 25 points of first year physics (or equivalent science) may be admitted to the 300 point, 3 year Master of Engineering (Electrical with Business) program.

This program has not previously received EUR-ACE Accreditation.

YEAR 1					
Semester 1			*Semester 2*		
MAST20029	Engineering Mathematics	12.5	ENGR90021	Engineering Practice and Comm.	12.5
COMP20005	Engineering Computation	12.5	ELEN20005	Foundations of Electrical Networks	12.5
ELEN30009	Electrical Network Analysis & Design	12.5	ELEN30011	Electrical Device Modelling	12.5
ELEN30010	Digital System Design	12.5	ELEN30012	Signals and Systems	12.5

YEAR 2					
Semester 3			*Semester 4*		
ELEN90056	Electronic Circuit Design	12.5	ELEN30013	Electronic System Implementation	12.5
ELEN90054	Probability and Random Models	12.5	ELEN90058	Signal Processing	12.5
ELEN90055	Control Systems	12.5	ELEN90066	Embedded System Design	12.5
ENGM90014	World of Engineering Management	12.5	ENGM90012	Marketing Management for Engin's	12.5

YEAR 3					
Semester 5			*Semester 6*		
ELEN90067	Electrical Engineering Capstone Project				25.0
	Electrical Engineering Elective	12.5	ELEN90057	Communication Systems	12.5
	Electrical Engineering Elective	12.5	ENGM90006	Engineering Contracts & Procurement	12.5
ENGM90011	Economic Analysis for Engineers	12.5	ENGM90013	Strategy Execution for Engineers	12.5

Electrical Engineering Electives		
ELEN90059	Lightwave Systems	12.5
ELEN90060	Power Systems Analysis	12.5
ELEN90051	Advanced Communication Systems	12.5
ELEN90052	Advanced Signal Processing	12.5
ELEN90074	Introduction to Power Engineering	12.5

Electrical Engineering Electives		
ELEN90061	Communication Networks	12.5
ELEN90062	High Speed Electronics	12.5
ELEN90064	Advanced Control Systems	12.5
ELEN90053	Electronic System Design	12.5
ELEN90075	Power Electronics	12.5

Common Engineering Subject
Core Discipline Subject
Elective Discipline Subject
Supporting Science Subject
Core Engineering Business Subject

3. Master of Engineering (Mechanical)

Students graduating from any 3-year degree program who have completed the equivalent of 25 points of first year mathematics and 25 points of first year physics (or equivalent science) may be admitted to the 300 point, 3 year Master of Engineering (Mechanical) program.

This program received EUR-ACE Accreditation at Second Cycle from ASIIN in 2011.

YEAR 1					
Semester 1			*Semester 2*		
MAST20029	Engineering Mathematics	12.5	ELEN20005	Foundations of Electrical Networks	12.5
MCEN30017	Mechanics and Materials	12.5	MCEN30014	Mechanical Design	12.5
ENGR20004	Engineering Mechanics	12.5	MCEN30018	Thermodynamics & Fluid Mechanics	12.5
COMP20005	Engineering Computation	12.5	MCEN30020	Systems Modelling and Analysis	12.5

YEAR 2					
Semester 3			*Semester 4*		
MCEN90012	Design for Manufacture	12.5	ENGR90021	Engineering Practice and Comm.	12.5
MCEN90014	Materials	12.5	MCEN90008	Fluid Dynamics	12.5
MCEN90038	Dynamics	12.5	MCEN90013	Design for Integration	12.5
ELEN90055	Control Systems	12.5	MCEN90026	Solid Mechanics	12.5

YEAR 3					
Semester 5			*Semester 6*		
MCEN90022	Capstone Project	25.0			
MCEN90015	Thermodynamics	12.5		Mechanical Engineering Elective	12.5
	Mechanical Engineering Elective	12.5		Mechanical Engineering Elective	12.5
	Mechanical Engineering Elective	12.5		Mechanical Engineering Elective	12.5

Group One Electives		
MCEN90018	Advanced Fluid Dynamics	12.5
MCEN90019	Advanced Thermodynamics	12.5
MCEN90020	Advanced Materials	12.5
MCEN90029	Advanced Solid Mechanics	12.5
MCEN90041	Advanced Dynamics	12.5
ELEN90064	Advanced Control Systems	12.5
ENGM90011	Economic Analysis for Engineers	12.5
ENGR90033	Internship	25.0

Group Two Electives		
MCEN90017	Advanced Motion Control	12.5
MCEN90023	Quality and Reliability	12.5
MCEN90028	Robotics and Automation Systems	12.5
MCEN90031	Applied High Performance Computing	12.5
MCEN90032	Sensor Systems	12.5
CVEN90062	Building Information Modelling	12.5
ENGR90024	Computational Fluid Dynamics	12.5
ENGR90026	Engineering Entrepreneurship	12.5
ENGR90028	Introduction to Energy Systems	12.5
BMEN90022	Computational Biomechanics	12.5
BMEN90029	Soft Tissue and Cellular Biomechanics	12.5

Common Engineering Subject
Core Discipline Subject
Elective Discipline Subject
Supporting Science Subject
Core Engineering Business Subject

4. Master of Engineering (Mechanical with Business)

Students graduating from any 3-year degree program who have completed the equivalent of 25 points of first year mathematics and 25 points of first year physics (or equivalent science) may be admitted to the 300 point, 3 year Master of Engineering (Mechanical with Business) program.

This program has not previously received EUR-ACE Accreditation.

YEAR 1					
Semester 1			*Semester 2*		
ENGR90021	Engineering Practice and Comm.	12.5	ELEN20005	Foundations of Electrical Networks	12.5
MAST20029	Engineering Mathematics	12.5	MCEN30014	Mechanical Design	12.5
MCEN30017	Mechanics and Materials	12.5	MCEN30018	Thermodynamics & Fluid Mechanics	12.5
ENGR20004	Engineering Mechanics	12.5	MCEN30020	Systems Modelling and Analysis	12.5

YEAR 2					
Semester 3			*Semester 4*		
MCEN90012	Design for Manufacture	12.5	MCEN90013	Design for Integration	12.5
MCEN90014	Materials	12.5	MCEN90026	Solid Mechanics	12.5
MCEN90015	Thermodynamics	12.5	ENGM90006	Engineering Contracts & Procurement	12.5
ENGM90014	World of Engineering Management	12.5	ENGM90012	Marketing Management for Engin's	12.5

YEAR 3					
Semester 5			*Semester 6*		
MCEN90022	Capstone Project	25.0	ELEN90055	Control Systems	12.5
			COMP20005	Engineering Computation	12.5
MCEN90038	Dynamics	12.5	MCEN90008	Fluid Dynamics	12.5
ENGM90011	Economic Analysis for Engineers	12.5	ENGM90013	Strategy Execution for Engineers	12.5

Common Engineering Subject
Core Discipline Subject
Elective Discipline Subject
Supporting Science Subject
Core Engineering Business Subject

5. Master of Engineering (Mechatronics)

Students graduating from any 3-year degree program who have completed the equivalent of 25 points of first year mathematics and 25 points of first year physics (or equivalent science) may be admitted to the 300 point, 3 year Master of Engineering (Mechatronics) program.

This program received EUR-ACE Accreditation at Second Cycle from ASIIN in 2011. The program below is a slightly modified version of the one accredited in 2011 incorporating changes to allow a great number of electives.

YEAR 1					
Semester 1			*Semester 2*		
MAST20029	Engineering Mathematics	12.5	ENGR90021	Engineering Practice and Comm.	12.5
ENGR20004	Engineering Mechanics	12.5	ENGR30003	Numerical Programm'g for Engineers	12.5
COMP20005	Engineering Computation	12.5	MCEN30020	Systems Modelling and Analysis	12.5
COMP90041	Programming & Software Developmt	12.5	ELEN20005	Foundations of Electrical Networks	12.5

YEAR 2					
Semester 3			*Semester 4*		
ELEN90055	Control Systems	12.5	ELEN90066	Embedded System Design	12.5
ELEN30014	Analog & Digital Electronics Concepts	12.5	ELEN90064	Advanced Control Systems	12.5
MCEN90038	Dynamics	12.5	MCEN30019	Mechatronics Systems Design	12.5
SWEN30006	Software Modelling and Design	12.5	MCEN90041	Advanced Dynamics	12.5

YEAR 3					
Semester 5			*Semester 6*		
MCEN90022	Capstone Project				25.0
MCEN90017	Advanced Motion Control	12.5	MCEN90032	Sensor Systems	12.5
	Mechatronics Elective	12.5		Mechatronics Elective	12.5
	Mechatronics Elective	12.5		Mechatronics Elective	12.5

Mechatronics Electives A (Choose at least one)		
MCEN90028	Robotics and Automation Systems	12.5
MCEN90039	Artificial Intelligence for Mechatron.	12.5
ENGR90033	Internship	25.0

Mechatronics Electives B (Choose as required)		
MCEN90008	Fluid Dynamics	12.5
MCEN90012	Design for Manufacture	12.5
MCEN90013	Design for Integration	12.5
MCEN90014	Materials	12.5
MCEN90015	Thermodynamics	12.5
MCEN90018	Fluid Mechanics	12.5
MCEN90019	Advanced Thermodynamics	12.5
MCEN90026	Solid Mechanics	12.5
MCEN90029	Advanced Solid Mechanics	12.5
ELEN90051	Advanced Communication Systems	12.5
ELEN90052	Advanced Signal Processing	12.5
ELEN90054	Probability and Random Modelling	12.5
ELEN90056	Electronic Circuit Design	12.5
ELEN90057	Communication Systems	12.5
ELEN90058	Signals Processing	12.5
COMP90007	Internet Technologies	12.5
COMP90014	Optimisation for Industry	12.5
COMP90015	Distributed Systems	12.5
COMP90018	Mobile Computing Sys Programming	12.5
COMP90020	Distributed Algorithms	12.5
COMP90024	Cluster and Cloud Computing	12.5
COMP90046	Constraint Programming	12.5
MAST90014	Optimisation for Industry	12.5
SWEN90007	Software Design and Architecture	12.5

6. Master of Engineering (Software)

Students graduating from any 3-year degree program who have completed the equivalent of 25 points of first year mathematics and 25 points of first year computing may be admitted to the 300 point, 3 year Master of Engineering (Software) program.

This program received EUR-ACE Accreditation at Second Cycle from ASIIN in 2011.

YEAR 1					
Semester 1			*Semester 2*		
COMP20005	Engineering Computation	12.5	INFO20003	Database Systems	12.5
COMP90007	Internet Technologies	12.5	COMP30026	Models of Computation	12.5
COMP90038	Algorithms and Complexity	12.5	SWEN30006	Software Modelling and Design	12.5
COMP90041	Programming & Software Developmt	12.5		CIS Elective	12.5

YEAR 2					
Semester 3			*Semester 4*		
SWEN90009	Software Requirements Analysis	12.5	SWEN90014	Masters Software Engineering Project	12.5
ISYS90050	IT Project and Change Management	12.5	SWEN90006	Software Testing and Reliability	12.5
ENGR90021	Engineering Practice and Comm.	12.5		CIS Advanced Elective	12.5
	CIS Elective	12.5		CIS Advanced Elective	12.5

YEAR 3					
Semester 5			*Semester 6*		
SWEN90013	Masters Advanced Software Project	25.0			
SWEN90010	High Integrity Systems Engineering	12.5	SWEN90007	Software Design and Architecture	12.5
SWEN40004	Modelling Complex Software Systems	12.5		CIS Advanced Elective	12.5
	CIS Advanced Elective	12.5		CIS Advanced Elective	12.5

Electives are drawn from the list below:

CIS Electives		
COMP30016	Computer Science Project	12.5
COMP30018	Knowledge Technologies	12.5
COMP30020	Declarative Programming	12.5
COMP30022	IT Project	12.5
COMP30023	Computer Systems	12.5
COMP30024	Artificial Intelligence	12.5
COMP30025	Theory of Computation	12.5
INFO30004	Usability Engineering	12.5
INFO30005	Web Information Technologies	12.5

CIS Advanced Electives		
COMP90014	Algorithms for Functional Genomics	12.5
COMP90017	Sensor Networks and Applications	12.5
COMP90018	Mobile Computing Systems Progr'ing	12.5
COMP90020	Distributed Algorithms	12.5
COMP90024	Cluster and Cloud Computing	12.5
COMP90025	Parallel and Multicore Computing	12.5
COMP90042	Web Search and Text Analysis	12.5
COMP90044	Research Methods	12.5
COMP90045	Programming Language Implement.	12.5
COMP90046	Constraint Programming	12.5
COMP90050	Advanced Database Systems	12.5
COMP90053	Program Analysis and Transformation	12.5
COMP90054	Software Agents	12.5

Common Engineering Subject
Core Discipline Subject
Elective Discipline Subject
Supporting Science Subject
Core Engineering Business Subject

7. Master of Engineering (Software with Business)

Students graduating from any 3-year degree program who have completed the equivalent of 25 points of first year mathematics and 25 points of first year computing may be admitted to the 300 point, 3 year Master of Engineering (Software with Business) program.

This program has not previously received EUR-ACE Accreditation.

YEAR 1					
Semester 1			*Semester 2*		
COMP20005	Engineering Computation	12.5	INFO20003	Database Systems	12.5
COMP90007	Internet Technologies	12.5	COMP30026	Models of Computation	12.5
COMP90038	Algorithms and Complexity	12.5	SWEN30006	Software Modelling and Design	12.5
COMP90041	Programming & Software Developmt	12.5		CIS Elective	12.5

YEAR 2					
Semester 3			*Semester 4*		
SWEN90009	Software Requirements Analysis	12.5	SWEN90014	Masters Software Engineering Project	12.5
ISYS90050	IT Project and Change Management	12.5	SWEN90006	Software Testing and Reliability	12.5
ENGR90021	Engineering Practice and Comm.	12.5	ENGM90006	Engineering Contracts & Procurement	12.5
ENGM90014	World of Engineering Management	12.5	ENGM90012	Marketing Management for Engin's	12.5

YEAR 3					
Semester 5			*Semester 6*		
SWEN90013	Masters Advanced Software Project	25.0			
SWEN40004	Modelling Complex Software Systems	12.5	SWEN90007	Software Design and Architecture	12.5
SWEN90010	High Integrity Systems Engineering	12.5		CIS Advanced Elective	12.5
ENGM90011	Economic Analysis for Engineers	12.5	ENGM90013	Strategy Execution for Engineers	12.5

Electives may be drawn from the list below:

CIS Electives		
COMP30016	Computer Science Project	12.5
COMP30018	Knowledge Technologies	12.5
COMP30020	Declarative Programming	12.5
COMP30022	IT Project	12.5
COMP30023	Computer Systems	12.5
COMP30024	Artificial Intelligence	12.5
COMP30025	Theory of Computation	12.5
INFO30004	Usability Engineering	12.5
INFO30005	Web Information Technologies	12.5

CIS Advanced Electives		
COMP90015	Distribution Systems	12.5
COMP90048	Declarative Programming	12.5
COMP90049	Knowledge Technologies	12.5
COMP90057	Advanced Theoretical Computer Sci.	12.5

Common Engineering Subject
Core Discipline Subject
Elective Discipline Subject
Supporting Science Subject
Core Engineering Business Subject