



# Evaluation of the new MCAST Engineering Degree Programmes

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## Foreword

The Chamber of Engineers (CoE) is recognised by law as the entity that represents engineering professionals in Malta. It is our mission to safeguard the integrity and standing of the profession. It is perfectly understandable, and in fact healthy, that engineering degree courses are provided by a multitude of institutions. It is however of paramount importance that as an organisation we have to ensure that the quality of our professionals is preserved.

Following the appointment of foreign consultants Asiin e.V., it transpired that pre-2018 MCAST engineering courses did not fulfill the right academic standard to qualify graduates for the warranting process. Amongst others, deficiencies in fundamental mathematics and physics principles, lack of appropriately trained staff and lack of infrastructure was pointed out. In view of this outcome the CoE and the local engineering community was concerned about the impact on the professions' quality.

The CoE fully agrees with the aforementioned follow-up report from the consultants and therefore is anticipating that the new MCAST engineering courses which have started in October 2018 meet the required expectations and are free from the shadow of the preceding courses which were identified to suffer from deficiencies.

The CoE recommends that the quality assurance and assessment processes at MCAST must be monitored thoroughly and is anticipating that ASIIN shall formulate conclusions only after a full assessment of the course and ideally after the course started producing individuals who practice their training in the market.

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Dr Ing. Daniel Micallef

**President**

14<sup>th</sup> October 2020



## Position of the Chamber of Engineers

ASIIN shall be carrying out an on-site visit at MCAST between 28-SEP-2020 and 01-OCT-2020. The focus of this visit is the auditing of the Level 6 240ECTS B.Eng. (Hons.) programmes having been launched by MCAST in October 2018. The first cohort which is expected to graduate from these new engineering degree courses will do so in 2022.

The Chamber of Engineers is adamant to see through a consolidated Pre-Warrant Qualifications Course which would convincingly bridge the gaps of their first degree engineering courses, which have been identified to have deficiencies in core engineering competences by ASIIN. Besides addressing shortcomings of the past, the Chamber is equally driven to support the quality assurance of new engineering courses which should have been designed to be up to standard, and therefore inherently free of the shortcomings of the predecessor courses.

The ASIIN consult will be carrying out a quality assurance exercise on each year of the 4 years of the electrical engineering (EE) and mechanical engineering (ME) degree courses, expected to ensure the benchmark level for an engineering qualification which leads to the attainment of the engineering profession warrant (per CAP 321 of the Laws of Malta).

In respect to the above, the Chamber is presenting the key requirements, in accordance with its vision, for these new engineering courses and this review process:

### **1. The New Degree programmes are to minimally address the below pillars to qualify themselves as accreditable engineering education programs:**

- Science, Mathematics and key engineering principles should form a fundamental part of the core material of the programmes.
- The engineering design process is to be covered through a lifecycle approach which addresses many considerations.
- Course content is to cater for engineering analysis and investigations which emulates problem solving and decision making in engineering teams.
- Engineering Practice is to adequately provide students with the more practical understanding and application of engineering knowledge.
- Transferable skills such as communication and team-working are to be addressed through the course programme
- The economic, social and environmental spheres are to be incorporated for a wider and more relevant context for the future engineering professional.



- 2. The degree programmes are recommended to address the minimum requirements for the formation of an engineer based on an overall 240ECTS<sup>1</sup>:**
  - Basic Sciences – minimum of 20% (48ECTS)
  - Mathematics – minimum of 10% (24ECTS)
  - Engineering Subjects – minimum of 50% to 60% (120 to 144ECTS)
  - Non-Technical Subjects – minimum 10% (24ECTS)
  
- 3. The course content is to unequivocally show that the deficiencies identified in the predecessor degree courses (as previously reviewed by ASIIN<sup>2</sup>) are eliminated in the new programmes.**
  
- 4. The review of the degree programme should ensure that the examination material is commensurate with the study unit content.**
  - a. The major component of examination methods should be a written formal exam.
  - b. Assessment criteria for study units is to be prescriptive and not possibly subject to interpretation.
  - c. Examination papers, assignments and project reports need to be made available to the reviewers for adequate quality control.
  
- 5. The eligibility of the new MCAST Degree Programmes, as sufficient academic qualification for the engineering profession warrant, is to be only concluded and confirmed after a satisfactory review, a posteriori, of each of the 4 years of the degree programmes, and preferably after a couple of years of the early graduates in the workplace.**
  
- 6. The course programmes should be subject to a periodic review process which includes input from stakeholders and ensures the maintenance of quality of engineering education.**

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<sup>1</sup> FEANI Index, Minimum Requirements for the formation of an engineer.

<sup>2</sup> Follow-up Report Concerning Action Plan aiming at qualifying for the Malta Engineering Warrant - Bachelor Degree Programmes (Honours) offered by Malta College of Arts, Science and Technology (MCAST), ASIIN, 2017