



Doc. 300.1.2

07.14.318.059

### Higher Education Institution's Response

### Conventional-face-to-face programme of study

Date: 12/07/2022

- **Higher Education Institution:**  
Frederick University
- **Campus:** Nicosia
- **School:** Engineering
- **Department / Sector:** Mechanical Engineering
- **Programme(s) of study under evaluation**  
Name (Duration, ECTS, Cycle)

#### Programme

##### **In Greek:**

Σχεδιασμός στην Κατασκευαστική Μηχανολογία (3 ακαδημαϊκά εξάμηνα, 90 ECTS, Master (MSc))

##### **In English:**

Manufacturing Engineering Design (3 academic semesters, 90 ECTS, Master (MSc))

##### **Language(s) of instruction: English**

- **Specializations (if any):**

**In Greek:** -

**In English:** -

**Programme's Status: Currently Operating**



The present document has been prepared within the framework of the authority and competencies of the Cyprus Agency of Quality Assurance and Accreditation in Higher Education, according to the provisions of the “Quality Assurance and Accreditation of Higher Education and the Establishment and Operation of an Agency on Related Matters Laws of 2015 to 2019” [N. 136 (I)/2015 to N. 35(I)/2019].

## A. Guidelines on content and structure of the report

- *The Higher Education Institution (HEI) based on the External Evaluation Committee's (EEC's) evaluation report (Doc.300.3.1) must justify whether actions have been taken in improving the quality of the department in each assessment area.*
- *In particular, under each assessment area, the HEI must respond on, without changing the format of the report:*
  - *the findings, strengths, areas of improvement and recommendations of the EEC*
  - *the deficiencies noted under the quality indicators (criteria)*
  - *the conclusions and final remarks noted by the EEC*
- *The HEI's response must follow below the EEC's comments, which must be copied from the external evaluation report (Doc. 300.3.1).*
- *In case of annexes, those should be attached and sent on a separate document.*

## 1. Study programme and study programme's design and development

(ESG 1.1, 1.2, 1.7, 1.8, 1.9)

### Areas of improvement and recommendations

1.a. The low number of students of the program is a potential weakness. The quality of the program might be hard to keep on a high level if the number of students is fluctuating considering both pedagogical and economic factors influencing both the in-class activities as well as the infrastructure, size of faculty etc. Effort should be taken to increase the number of students on the program. Another alternative is to offer courses in collaboration with other master programs.

#### Department's Response:

In order to ensure the quality of teaching, the University in addition to the extended quality assurance mechanisms it applies to its programmes, it also follows the CYQAA guidelines where there need to be at least 5 students in a group in order to offer any of it's Master Programmes.

The Department has recently launched a promotional campaign via electronic posts, and published flyers, targeting the promotion of the strengths of the program, which are considered to be the high employability of the graduates, the strong laboratory support of the courses, the qualifications of the research and teaching staff to support all the teaching domains of the programs offered and other.

Furthermore, the University has launched a campaign called "Women in STEM" ([Link](#)) offering scholarships to all women interested any of the programmes of the engineering and technology field, as means to both implement the University's EDI (Equality, Diversity, Inclusion) [policy](#) and goals as well as to further promote the engineering programmes. Furthermore, full scholarships are offered in memory of the Frederick University's founder Mr Michael Frederickou ([Link](#)) as well as STEM scholarships in collaboration with international Partners, such as Chevron ([Link](#)).

1.b. There are learning outcomes of the program that are not met by the mandatory courses in the curricula but rely on the students to make “the right” selection among the elective courses. This is for the “non-technical” aspects of the program. Maybe these aspects are covered in the courses anyhow, but it is not clear from the course descriptions.

**Department’s Response:**

The course descriptions have been revised to better indicate on how the learning outcomes of the programme are achieved. More specifically, the programmes learning outcomes are achieved through specific courses such as:

<u>Learning Outcomes</u>	<u>Courses</u>
Be provided with broader knowledge of advanced design, manufacturing, welding and additive manufacturing, the technological evolution and current needs of the industry, the financial evolution of the industry and the financial drivers and needs of the international activities.	MED501 MED504 MED507
Formulate the content and philosophy of the European and Cypriot legislative framework and to develop relevant processes and factors.	MED509 MED510
Improve the contemporary global, regional and local issues and develop systemic, critical and creative thinking about their impact on economic activities.	MED510 MED508
Acquire skills and experiences necessary for engineers who will lead the fields of modern design, additive manufacturing, 3D printing and production engineering activities.	MED501 MED502 MED503 MED504
Improve the procedures and analysis needed to enforce pertinent legislation, enhance the issuance of international	MED501 MED508

<u>Learning Outcomes</u>	<u>Courses</u>
mechanical design and production related certification, and better facilitate the environmental labelling procedure and perform feasibility analysis.	
Develop a keen understanding of modern design and production enterprises and opportunities.	MED508
Improve processes such as welding, equipment, materials and metallurgy and welding safety.	MED501 MED502 MED503 MED504
Propose new methods to inspect and evaluate quality of welds and finished weldments.	MED502 MED506
Develop a balanced perspective on safety and environmental concerns by offering to the students a broad-based understanding which will help at management level decision.	MED501 MED509 MED510 MED508
Be equipped with the necessary knowledge and acumen to move into decision-making roles.	MED501 MED509 MED510 MED508
Prioritized the organizational, political and entrepreneurial aspects of the industry.	MED508
Combine effectively state-of-the-art software tools for advanced design and manufacturing engineering.	MED501 MED502 MED503

<u>Learning Outcomes</u>	<u>Courses</u>
	MED504
Propose new research programs for local and international funding opportunities for promoting in a sustainable way the activities of modern design and production industry.	MED509 MED510
Obtaining the necessary knowledge background so that they can become chartered in the professional chambers and associations	MED509 MED510
Create new and innovative research results for education.	MED501, MED502 MED503, MED504 MED505, MED506 MED507, MED508
Formulate and balancing financial reporting and contractual activity of the design and production industry	MED501 MED508
Illustrating leading edge company practice in all areas of financial reporting, from environmental impact to corporate strategy and to emphasise the roles of all players	MED501 MED508

Please refer to Annex 1 – Course Descriptions.

1.c. The interviews with the teachers and students gave the impression that teaching was indeed student centric and focusing on active learning and real-world problems. However, when reading the course descriptions, teaching methodology is mostly described as lecturing. Hence there seems to be a mismatch between how the courses are described and how they are taught.

**Department's Response:**

Teaching is student centric and focusing on active learning and real-world problems. All courses description were revised in order to describe and reinforce the above statement. (Please refer to Annex 01 – Course Descriptions).

1.d. Adding or clear publicizing of mandatory health and safety training, especially ahead of the lab work

**Department's Response:**

All students and academic staff must abide by the health and safety procedures of the University. At the beginning of each course, and before any laboratory work is performed, students are trained on the relevant procedures and sign an affirmation form.

Health and safety manuals for equipment and laboratory work can be found in every laboratory area and at eLearning platform of each Course. (please refer to Annex 02 – Health and Safety Policy).





1.e. When reading the application, the quality assurance system was somewhat hard to grasp. However, after the online visit the system were well understood. It would have been good if some of the pictures that were presented during the online visit were also included in the application as they gave a very clear picture of how the quality assurance system works in practice

**Department's Response:**

We would like to thank the EEC for their positive remarks. The quality assurance section of the application has been updated accordingly as per the presentation shown during the visit. Please refer to Annex 03 for the quality assurance process visual presentation.

## 2. Student – centred learning, teaching and assessment

### (ESG 1.3)

#### Areas of improvement and recommendations

2.a. Provide more structured access or experience of equipment not available to Frederick students directly, through visits to collaborators.

#### Department's Response:

The Department has a great number of factories and companies collaborators where students can visit and use their equipment. Some of the equipment they can use are Machinery, CNC machines, milling turning machines, blow moulding equipment, Laser cutting, tube bending, punching, Plasma cutting, Sheet Bending, Stainless steel constructions, Renewable energy research organization, Solar oven, Carbon fiber, Glass fiber, CNC router, Mould construction, CAD/CAM systems.

Examples of Industry Collaborations for the programme where the students may use specialized equipment are:

#	Company	Activities
1.	Panayi Panayiotis Machinery Ltd	Machinery, CNC machines, milling turning machines
2.	Oasi Business And Technicians Ltd	Machinery, CNC machines, milling turning machines
3.	Morfomichaniki Ltd	Machinery, CNC machines, milling turning machines, Molds
4.	Nucleus Research & Development Centre Ltd	Research organization, product development
5.	Digimind GmbH	Industrial research, blow moulding research (Germany)
6.	Lakatamia Municipality	Workshop, Laser cutting, tube bending
7.	Wamet Demetriades CNC	CNC supplier
8.	Remedica Ltd	Pharmaceutical company, CNC milling and turning

#	Company	Activities
9.	Pecodea LTD	Lift Manufacturers, Milling, turning, punching, Plasma cutting, Sheet Bending
10.	E.Z Professional Ltd	Business that has managed to establish in the INOX chimney industry, CNC router, plasma cutting, TIG welding
11.	Zevlaris Dimitris Ltd	Stainless steel constructions
12.	Vassiliko Cement Works Public Company Ltd	CNC lathe machines, Milling, turning machines
13.	High Efficiency Renewable Energies (H.E.R.E.) Ltd & Fornelia Ltd)	Renewable energy research organization, Solar oven, Machinery
14.	Deherco Ltd	Steel construction company, machinery, milling, turning, punching
15.	SP Skies Ltd	Carbon fiber, Glass fiber, CNC router, Mould construction
16.	Costas Theodorou Ltd	Travel Luggage, Business, Backpacks And Bags, Ladies Bags, Accessories, Disney & Kids, CAD/CAM systems, CNC router
17.	Archimedes Ltd	Machinery, Sheet metal and tube bending, Laser and Plasma cutting
18.	CNC Solutions	CNC Training Center, Milling, Turning (Greece)
19.	Michael Michalis	Machinery, CNC machines, Milling, Turning, EDM
20.	A. Antoniou Machinery Ltd	Building machines constructor

2.b. Increase of problem centred learning into other modules than the thesis, prevents an over reliance on the thesis for a good experience, and provides more variety for the students.

**Department's Response:**

We accept and adopt the recommendation of the EEC. Additional to the two thesis courses where the students are expected to research information, conduct literature review, apply statistical methods (qualitative and quantitative) in order to conduct their Master Thesis, students also engage in problem centered learning into all programme courses through out their studies, via working in teams for case study analysis, via individual or group projects and assignments that requires critical thinking and analysis, and throught out laboratory work where they apply problem solving across disciplines and apply their course countent to real-world examples.

The courses descriptions have been updated in order to better reflect the problem cantered learning student experience. Please refer to Annex 01 – Course Descriptions.

2.a. While the lab infrastructure is currently sufficient, the University administration needs to continuously examine and support the Department in upgrading facilities for this state-of-the-art field of additive manufacturing.

**Department's Response:**

As the External Evaluation Committee noted, the lab infrastructure for this specific programme is sufficient for its operation. The University has procedures in place to evaluate and monitor the needs of each programme regarding laboratory equipment and facilities. At the planning of each academic year the Department submits a form regarding inventory needs and prospective equipment needs for each programme's operation. Furthermore, besides from the University's infrastructure, the current programme enjoys the benefits of close industry collaborations with which the Department cooperates for the use of specialized equipment in some courses, as shown in the table in answer 2a.



2.b. Most of the students are in employment. We recommend active dialogue with the students to help balancing requirements from their jobs and studies, e.g. teaching in the afternoon.

**Department's Response:**

The courses of the Master programmes in Frederick University, are provided in the afternoon (after 18:00) in an effort to balance the requirements between student job and studies, as correctly indicated by the External Evaluation Committee.

### 3. Teaching staff

#### (ESG 1.5)

#### Areas of improvement and recommendations

3.a. Increase in international student will need to change the student experience and ensure student journey does not suffer. The low number of students on the course (10-15), means that it is relatively easy for staff to support students well. With the ambition to grow the course this will come with tensions, both in terms of student expectations but also in staff requirements for research time. The current research is impressive for a relatively small department, but how will this be affected if student numbers grow? There needs to be a plan in place to strategically grow the academic, technical and support staff along with the student numbers – this is very difficult to do in a volatile student market and will likely rely on staff sacrificing elements of their roles if student numbers meet targets, at least in the short term.

#### Department's Response:

As the External Evaluation Committee noted, the department's research output is impressive. The University is committed in promoting the research culture between all of its Departments and has procedures and research incentives in place to ensure it. Examples of such procedures and incentives are KPIs with measurable goals the department's must achieve, teaching load reduction (average between 9-10 hours), further internal funding etc.

The University is monitoring the registration numbers and, if the need arises that for more academic staff to support any possible increase in student numbers, will employ the processes in place for hiring and evaluation ([Link](#)). Furthermore, the Departments, at the end of each academic year, prepare a report regarding faculty needs and submit it to the Senate for approval.

#### 4. Student admission, progression, recognition and certification

(ESG 1.4)

##### Areas of improvement and recommendations

4.a. Should the student uptake increase, then adding quantifiable admissions requirements: minimum GPA or class percentile.

##### Department's Response:

The Department already applies additional criteria for the selection of students such as professional experience, interviews etc. The University is monitoring the registration numbers and, if the need arises, then as per the suggestion of the External Evaluation Committee further admission requirements such as minimum GPA will be applied.

4.b. Appoint formally the two members of the evaluation committee.

##### Department's Response:

The two (2) members of the Evaluation Committee are (1) Dr. Soteris Omirou and (2) Dr. Loucas Papadakis.

4.c. For external students, also ask for a recommendation letter.

##### Department's Response:

We accept and adopt the recommendation of the EEC. As part of the admission criteria for external students, a recommendation letter is required for admission to the programme.

4.d. Highlight the application timeline and appeals procedure. Clarify the situation of the student should s/he fail a course.

**Department's Response:**

**ADMISSIONS DECISION APPEAL**

An admission is denied only after extensive review of the applicant's academic qualifications and the program's entry requirements. In case of rejection, the applicant is provided with a clear justification of how their qualifications do not meet the program's entry requirements. In order for an appeal to have merit the student must provide additional documentation which prove that they are academically stronger than originally shown and that they indeed meet the entry requirements of the program. In this case, the applicant submits an appeal within 7 days of the official rejection letter, and the appeal request is forwarded to the Department.

**COURSE GRADE RESULTS**

It is important to mention that student progress in a course is assessed throughout the semester and consists of both coursework and final assessments. Coursework assessments are multiple and take place throughout the semester where student receives continuous and timely feedback from the course in order to improve results. Final assessment takes place after the end of each semester and can include a written examination, a project, a portfolio etc.

**Second Examination**

Students have the possibility to repeat final examinations, in courses that they have failed in the Fall and Spring semester examination period. To be eligible to participate in the B examination, students must meet certain eligibility criteria (student handbook p.g. 21, [Link](#))

Students can register for second examination only if they achieve a coursework grade of over 40% or an overall grade of 40-49%.



## Grade Appeal

A graduate or undergraduate student may appeal a final course grade by taking the following steps:

- Step 1: Within three days in which the grade was published, the student should contact and discuss their final grade with the course instructor, stating the reasons for questioning the grade. If the issue is resolved, then the matter is considered closed and no further action is taken. If the result proves to be an error or an omission on the part of the course instructor, then the instructor will follow the procedure for 'course grade change'.
- Step 2: If the issue is not resolved, then the student will need to submit, using the appropriate form, to the Registrar's Office a formal request for re-evaluation of the final assessment within seven days of the date that the course final grade was published. The Registrar's Office will forward the request to the Head of the student's Department and then the Head will proceed with appointing the re-evaluation committee, which consists of faculty members within the Department. The student's final assessment is forwarded to the appointed re-evaluation committee members without the student details or grade shown. The committee proceeds with re-evaluation of the assessment and submit their final grade to the Head. The committee's grade is the final course grade the student is awarded.
- Step 3: If the student continues not to be satisfied with the grade awarded by the re-evaluation committee, then they shall, within one week thereafter, submit the Course Appeal Form to the Dean, through the Director of the Studies and Student Welfare Committee. The Dean will reach a final decision after full consideration of the committee's recommendation and within two weeks of receiving the student's appeal.

Throughout the appeal's process the student can ask for the support of their Academic Advisor and/or the Student Advocate.

4.e. Re-examine the acceptance criteria with respect to the departmental presentation.

**Department's Response:**

English is the official instruction language of the Programme. Candidates' minimum qualifications for admittance to the program are a. Bachelor's Degree from an accredited University in Engineering, b. Fluency in English.

It is likely that the number of candidates may be greater than the maximum number of students that can be admitted to the Program. In this case additional criteria for the selection of the students would be: a. Bachelor's Degree Overall, and Upper-Class, Grade Point Average; b. professional experience; c. candidate's involvement in courses and activities related to sustainable energy systems, environmental issues and sustainable development; d. knowledge and experience in the use of Information and Communication Technologies.

Eligible candidates will be selected and admitted to the Programme, after a personal interview. The interviews will be conducted by an Evaluation Committee, formed by the Program Coordinator (chair of the committee) and two members of the Programme's teaching staff."

4.f. Conduct open days, especially geared towards potential students from outside of the University and Cyprus to enable them to meet the Faculty members and alumni.

**Department's Response:**

At the beginning of every semester an open day is organized where potential students can meet with faculty members as well as with industry collaborators, prospective employers and former alumni. ([Link1](#), [Link2](#), [Link3](#))

In addition, if any of the candidates want to have a meeting with staff member, s/he can request for an appointment where s/he can also visit the laboratories for a tour.

4.g. Present the consequences of failing a course to the students.

**Department's Response:**

Please refer to previous answer 4.d.

## 5. Learning resources and student support

(ESG 1.6)

### Areas of improvement and recommendations

5.a. The different methods of teaching are not clearly specified in the courses' descriptions as was at the onsite visit. The teaching methods should be clarified on the courses' syllabuses.

#### Department's Response:

We accept the EEC recommendation. All course descriptions have been revised to clearly specify the different teaching methods. Please refer to Annex 01 – Course Descriptions.

5.b. It should be included on financial criteria the students from refugees' families due to the Cypriot problem. It is still a major problem in Cyprus and in many domains where economic privileges are provided based on different criteria, the refugees are considered as one of them. It could be also a reason to attract students that choose the public universities instead of the private ones.

#### Department's Response:

The University notes and accepts the EEC's comment. A further criterion on our points system for financial aid will address refugee status of Cypriots. It is further noted that the University has in place an international refugee support scheme with scholarships.

## 6. Conclusions and final remarks

6.a. The evaluation committee was impressed by the programme, which is timely and required. Thought and care was put into the planning, considering both the general requirements for mechanical engineering for manufacturing design, and the specific requirements of the Cypriot society and economy. Since the topic is state-of-the-art, requiring advanced equipment, it is important that the University continuously monitor the programme, and invest in the infrastructure so as to keep the department competitive. We recommend implementing a standard Health and Safety process ahead of lab work, e.g. exams, inspections etc. We also recommend that students have access to lab guides and instrumentation manuals ahead of the lab work. The teaching methodology on the program are student centric and it also focuses on real world problems. The course descriptions however mostly describe teaching as lecture based, hence these could be updated to better reflect the actual methods of teaching. Also some of the learning outcomes of the program are not met by the mandatory courses, which needs to be considered. The university might also consider sharing teaching resources/courses between departments and other master programs to handle situations with low or volatile student numbers. Regarding the student's admission and progression, we also recommend revisiting the acceptance criteria with respect to the departmental presentation, and to clarify the consequences of failing a course to the students. Finally, there is need for finding ways to attract international students.

### Department's Response:

The Department of Mechanical Engineering wishes to express its gratitude to the members of the External Evaluation Committee for their thorough and insightful evaluation of the master programme of study MSc in Manufacturing Engineering Design, as well as their fruitful comments and constructive discussion. The accreditation process provided the opportunity to the Department and the Program Coordinators to obtain the objective views of external and independent peers, as well as examine aspects of the program from a different perspective. The Department has already considered the issues raised, as well as the recommendations of the EEC and has already acted upon, in terms of implementing the Committee's recommendations as shown in sections 1 to 5.



The Department also wishes to thank the Cyprus Agency of Quality Assurance and Accreditation in Higher Education, as well as the members of staff of the Agency that facilitated the organisation and implementation of the External Evaluation Committee's visit for the evaluation of the program of study.



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CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION



## B. Higher Education Institution academic representatives

<i>Name</i>	<i>Position</i>	<i>Signature</i>
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**Prof. George Demosthenous** Rector

Date: 12/07/2022

