



UNIVERSITY *of* NICOSIA

Response to the External Evaluation Report

Programme of Study

Master of Science in Sustainable Architecture
and Integrative Technologies
(Distance Learning)

Nicosia
29 June 2018

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I. Introduction

We refer to the Report of the External Evaluation Committee (EEC), for the evaluation of the programme of study “Master of Science in Sustainable Architecture and Integrative Technologies (Distance Learning)”, which was prepared following a visit to the University of Nicosia on 28 March 2018. We would like to thank the members of the EEC for their professional and thorough evaluation of the programme, and we would also like to express our appreciation for the collegial and constructive approach with which they conducted their evaluation.

We would like to note that the response of the committee is positive and that 87 out of 100 indicators are satisfactory. In particular, 48 indicators were graded as applicable to a very satisfactory degree, and 37 applicable to a satisfactory degree.

We welcome the EEC’s recommendations for improvements which aim to enhance the quality of our programme and we address them in the corresponding section of our response. We consider the suggestions constructive and we have incorporated them into our revision of the program.

The response to the EEC is structured as follows. The introduction is followed by section II, where a selection of positive comments have been highlighted. In section III we address all the recommendations for improvement made by the committee, both in summary but also in detail in each of the categories. Our conclusions are followed by the Appendices; there, we include the changes that were too long to be inserted in the corresponding subsections.

II. Positive Comments made by the Committee

We have selected some of the positive comments made by the committee which are quoted below:

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- *An enormous amount of effort has been put in the organization and set up of this MSc and its student centred character shows staff commitment, dedication and competence in and endeavor which can become a successful MSc course.*

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- *The Administrative Mechanisms in the Department of Architecture as well as the overall administrative mechanisms are satisfactory. The commitment and the cohesion of the members is very helpful and reinforces the programme.*
- *The Student Welfare is well organized with a clear policy and has the ability to help and support distance learning students. The student welfare service addresses academic and personal problems and can provide the needed support to the students...*
- *Sustainable architecture and integrative technologies is an internationally significant programme of study and it is clear from the evidence provided that this type of programme is lacking in the region as well.*

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- *...The online library and the teaching material are adequate and fully accessible to students.*
- *The university has established a systematic process for the evaluation of the faculty members by the students and for the provision of the respective feedback to them so as to enforce continuous appraisal and improvement. It is, also, positive that prospective staff are required to possess a certain level of IT skills so as to be able to respond to the specific demands of this delivery mode and each programme separately. In addition, there are established procedures for appropriate training, guidance and support provided to teaching staff, to enable them to efficiently support the educational process.*
- *Student performance monitoring is well-structured...this is reflected in the very low dropout rate. Student mentoring by the teaching staff is provided to them in a well-structured way. The unimpeded communication between the teaching staff and the students is ensured by many alternate ways.*
- *Assessment consistency, its equal application to all students, and the compliance with predefined procedures, are ensured in a well-structured way.*
- *The programme of study has the appropriate and adequate infrastructure for the support of learning. The supporting infrastructures are easily accessible. Students are informed and trained regarding the available educational infrastructure. The procedures for systematic control and improvement of the supporting services are regular and effective.*
- *Infrastructure for distance education is in line with the one found in the European Union and internationally. The electronic library services are provided according to international practice in order to support the needs of both the students and the teaching staff. The*

students and the teaching staff have access to the necessary electronic sources of information, relevant to the programme, the level, and the method of teaching.

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- The proposed programme has a good teaching context and geographical base: an architecture school, particularly focuses on design concepts and practices, located in an excellent building facility in Nicosia.*
- The proposed programme focus on Sustainable Architecture has the opportunity to add something exciting to the Department, strengthening its identity, the work produced, achievements and reach. It is a necessary component of the future development of the department, and one that can add academic diversity and specialization. It can introduce scientific research practices and technology knowledge to the existing content of the Department.*
- The presence of the architecture school as a building that has the possibility to be advertised and used as an exceptional national and international forum that can support academic, industry and community exchanges on sustainable architecture.*

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- ...The degree with which the programme compares positively with corresponding programs operating in Cyprus and abroad in higher education institutions of the same rank is commended.*

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- There are good mechanisms in place at the university and department level.*

III. Suggestions and Recommendations by the Committee

In this section we address the suggestions and recommendations made by the committee on each criterion of each category. Actions taken in relation to the EEC suggestions are explained in our response and a number of appendices support our document.

EEC Suggestion no.1, p.11

To develop, refine and clearly articulate a progressive vision for sustainable architecture, making the programme more timely, competitive and relatively unique in the international educational field of sustainable architecture. To consider the Department's location and design focus, and how these can add an authentic component to the purpose and activities of the programme.

Our Response/Action

We appreciate the above suggestion with regard to the vision and the content of proposed MSc programme of study.

The Department of Architecture aims to offer a well-structured, focused postgraduate degree, whose content and context have a strong international character. The main areas of focus and the changes that have been incorporated into the programme and which aim to enhance its unique qualities and forward thinking vision in relation to the above comments are as follows:

- Capitalize on the design quality that currently exists in the Department:

The new semester structure and the programme's refined learning outcomes and modules, evidence a stronger emphasis on design and research. An important modification to the programme is the emphasis given to the course "ARCH-591 DL: Research Project" in the third semester. The research project is a student driven research module which integrates an advanced level of architectural technologies through the development of an architectural design project or a written thesis. The module is intended to both enhance theoretical knowledge and develop practical applications through a highly resolved architectural solution.

The module has an increased ECTS value and specifically focuses on research through design. This responds to the committee's comment regarding better utilisation of the departments' existing design focus, as well as on promoting the development of innovative design solutions which are technically viable and environmentally friendly, something which is in line with the EU and UN ambitions.

- Explore the geographic location of the school and its knowledge of regional architecture.

Teaching staff have specific knowledge and expertise in local architecture and environmental conditions that influence their understanding and application of knowledge about the region. This will be purposely reinforced and transferred through lectures and web discussions with students. Furthermore, due to its DL nature the program will include an international student body, who will bring to the fore additional knowledge and research based of their own locality.

- Integration of different technological systems, disciplines and expertise.

The programme is unique in its endeavour to promote an overarching assimilation and synthesis of knowledge in the field by focusing on integrated systems of technology. Based on the premise that sustainable practice requires active and dynamic cross-disciplinary collaboration, the programme capitalizes on two of its inherent advantages. First, that of integrated (cross disciplinary) knowledge, and second, that of the synthesis of knowledge and information. These aims are to be achieved at the level of smaller weekly assignments through to student led design and research projects.

- The Department is composed of faculty members who specialize in selected fields of research and development in the wider area of sustainable architecture. It is expected that the collaborative work of the faculty will lead to the formulation of a distinct identity for the programme and will yield creative and scientific achievements in research, which, in turn, will benefit our students.

- The learning outcomes of the programme have been further refined to more concisely reflect the programme vision.

Please refer to **Appendices A and B**.

EEC Suggestion no.2, p.11

To improve the exact academic content of the programme in relation to the MSc award, and justify why this is not appropriate for an MEng award. The MSc title would require the delivery of strong research-based projects/theses supervised by research active staff at PhD level or equivalent.

Our Response/Action:

As a response to this comment of the committee we have implemented the following changes that improve and enhance the contents of the programme and justify its classification as an MSc award:

- Module “ARCH-590 DL: Research Methodology” has been moved to the first semester and is now compulsory for all students. Moving the ARCH-590 module to the beginning of the programme pathway results in a more cohesive integration of all parallel and subsequent courses that eventually culminate in the final semester module “ARCH-591 DL: Research Project”.

- The amended third semester module “ARCH-591 DL: Research Project” is now compulsory for all students. It has been enriched in content and its credit load has been increased to 30 ECTS to enable the production of strong research-based projects/theses supervised by staff who are active researchers. In order to successfully complete this module students work on a single research project (delivered as a design project or a written thesis), displaying commitment to methodological rigour, a high degree of scientific and creative achievement, as well as an awareness of context of theories and practices in the chosen field of study. Students will be supported and supervised by a large number of faculty with relevant research interests and proven specialised expertise.

- The reduction of programme modules from six to five. The module “ARCH-550 DL: Advanced Principles of Bioclimatic Architecture” has been modified to include the learning objectives of “ARCH-552 DL: Ecological Thinking and the Built Environment”. The latter module has been removed from the programme pathway in order to dedicate more ECTS towards the “ARCH-591 DL: Research Project”. Please refer to **Appendices A and B** for further details.

EEC Suggestion no.3, p.11

To create vertical research-based threads and connections of teaching and learning in the three semesters

Our Response/Action:

We appreciate the above suggestion by the committee and we have responded by making changes to the structure of the programme as previously mentioned. We reiterate that:

- By introducing module “ARCH-590 DL: Research Methodology” in the first semester we ensure that all students become familiar with research techniques, study plans and techniques of analysis early on. Students are therefore able to conduct disciplined research in the subsequent classes, resulting in a more cohesive integration of all parallel courses that eventually culminate in the final semester module “ARCH-591 DL: Research Project”.

EEC Suggestion no.4, p.11

To reduce staff’s volume of workload, ensuring that enough research and staff development time is allocated for all programme staff, including early and mid-career researchers.

Our Response/Action:

Average staff teaching workload corresponds to 12h weekly. Within the current programme under evaluation, the teaching staff is only allowed to teach 2 courses (or sections) per semester, therefore, approximately 6h weekly.

The University has in place several mechanisms to ensure enough research and staff development time. Research Time Release (RTR) is granted to faculty by the Research Committee (RC), on an individual basis, according to specific eligibility guidelines and criteria. RTR ranges from 3 to 6 hours, the norm being 6-hour time release for the academic year. The University has also established procedures for sabbaticals to be used for research, writing, and contribution to the society by the academic personnel.

1. EFFECTIVENESS OF TEACHING WORK – AVAILABLE RESOURCES

1.1.3.1. The implementation of a specific academic calendar and its timely publication. (the EEC was unable to comment)

Our Response/Action:

The academic calendar of the University is published at least 4 months in advance and is available through the University of Nicosia Website (www.unic.ac.cy).

All information regarding the programme of study such as duration, ECTS workload, learning outcomes, course syllabi, semester breakdown, assessment methods, etc. is available through the University website. The University of Nicosia has been awarded the ECTS and the Diploma supplement labels, thus all information required by points 1.1.1 to 1.1.3 is available at the

University's website for current and prospective students, and presented in a clear, transparent and structured manner.

1.1.3.4. The procedures for the fulfilment of undergraduate and postgraduate assignments/practical training. (N/A)

Our Response/Action:

As far as Practical training is concerned, this is not applicable in this programme.

As pointed out above, each module has a Syllabus and Outline, which include all relevant information regarding the course content, learning outcomes, the procedures for the fulfilment of assignments, the learner activities and assessment methods. Course syllabi and outlines are developed based on ECTS requirements, ensuring uniformity across the University. Course syllabi and outlines are available on the university website, student portal and also instructors distribute them to students upon enrollment into courses. Detailed Study Guides are also made available to students enrolled in the programme.

Course syllabi, outlines and study guides were submitted as part of the Application for Evaluation-Accreditation document and were made available to the EEC.

1.1.3.5. The procedures for the conduct and the format of the examinations and for student assessment. (Indicator: 2/5)

EEC Suggestions, Pages 15,16:

The assessments need more refinement in terms of content. More consistency is needed in terms of format, workload and mode of submission. For instance, reflecting on reading and undertaking structural analysis demand different levels of engagement but are granted similar grade weights across modules. This needs to be standardized. More clarity about when submissions are due, what they are, how they should be submitted and how they are going to be assessed should be in a simple table in the written paperwork (not just on Moodle). Assessment criteria needs to better reflect post-graduate level- e.g. memorizing and listing are not considered MSc level knowledge. Assessment for all modules should be mapped in parallel on a weekly basis per semester to avoid clashes of submission deadlines, student stress and duplication.

Our Response/Action:

Assessment methods for each course are indicated in the Course Syllabus and Course Outline which are available to all students. A principal means for maintaining academic standards and soliciting feedback on the standards of student assessment is the peer review of examinations which is an integral and essential part of institutional quality assurance. The final exams and assessment methods are designed and decided based on the learning outcomes to be achieved.

In order to regulate the timetabling and assessment procedure across the whole programme, all module material are submitted to the Programme's Internal Quality Committee in order to monitor,

standardize and map on a weekly basis per semester the assessment criteria at least 4 weeks before the commencement of the semester in which the module is delivered.

“Course Assessment Guides” for each module have been prepared by Course Leaders and include: a timetable of assessments, submission deadlines, required format and grading criteria. Modifications have been made to assessment requirements with regard to the necessary skills and purpose of each assignment, reflecting the level of difficulty and grade value appropriate to postgraduate studies. Assessment criteria appear in a clear format (i.e. there is a table with categories indicating how students are assessed) and the students’ performance is assessed based on a variety of assessment sources (attendance/participation, projects, midterm assessments, final exam). Please refer to **Appendix C** for samples of “Course Assessment Guides”.

1.1.10. Academic mentoring processes are transparent and effective for undergraduate and postgraduate programs and are taken into consideration for the calculation for academic workload. (Indicator: 2/5)

[EEC Suggestion, Page 16:](#)

The mentoring process can be more explicit and carefully thought-through and implemented alongside staff workload management.

Our Response/Action:

The University of Nicosia maintains a student-centred learning environment that promotes and encourages student interaction and feedback throughout the curriculum design, evaluation and quality assurance of the programmes. Course/faculty evaluation questionnaires are conducted every semester (at a minimum), analysed and feedback is provided to all stakeholders.

On-line facilities and services (internet/intranet) are available for students to provide feedback and express complaints. “Board of studies” meetings allow students to interact with their instructors at the beginning and halfway through the semester to discuss issues pertaining to their studies.

Details on monitoring student performance and mentoring both from the academic but also from the personal point of view are provided in the “UNIC Distance Learning Faculty Handbook”.

Please see below selected relevant extracts from the “UNIC Distance Learning Faculty Handbook”:

- *Faculty is encouraged to create a supportive online community by engaging students in an interactive course and keep their success rates high.*
- *Faculty is expected to closely monitor the progress of their students (i.e. make sure that students log in to the platform regularly, understand the key concepts of the course and keep up with the course deadlines and assessments).*
- *Faculty track student activity in Moodle by generating reports showing which resources and activities of a course have been accessed, when, and by whom. To enhance student retention and success, students who do not log in the platform regularly are contacted by the DL Unit upon request by the corresponding faculty.*
- *Faculty is recommended to prepare weekly formative assessments that aim to establish whether students are familiar with the material and the learning objectives of the week. These individual or*

group activities encourage students to learn through application, as well as to monitor their learning.

- Student mentoring takes place through online communication. Faculty is requested to make provision for office hours (e.g. 3 hours per week), during which DL students can contact them via telephone, Skype, chat or in person. This information should be also included in the Course Outline. In cases where the specific hours are not convenient for students, faculty should provide the option for communication by appointment.

1.1.12. Program of study provides satisfactory mechanisms for complaint management and for dispute resolution. (Indicator: 1/5)

EEC Suggestion, Page 16:

No information was provided for this. This could be beneficial provided in the student's guideline document. See comments about "quality manual" in final remarks.

Our Response/Action:

The University of Nicosia regulations are very thorough with regards complain management and dispute resolution, allowing for student petitions that are examined at all levels of the academic hierarchy [<https://www.unic.ac.cy/study/current-students/academic-rules-and-regulations>]. Online facilities and services (internet/intranet) are available for students to provide feedback and express complaints. Feedback is analysed and answers are provided within set deadlines.

Staff members of the Distance Learning Unit are available to exclusively support the administrative needs of distance learning students. In addition distance learning academic advisors closely monitor the academic progress of students and provide personalized guidance and support for the enhancement of their academic performance. The support and services provided by the Distance Learning Unit lead to high retention rates.

1.2.4. The assessment system and criteria regarding student course performance, are clear, adequate, and known to the students. (Indicator: 2/5)

EEC Suggestion, Page 17:

Learning outcomes need to be better synthesized and reduced for some units. They also need to be more concise, clearer in the use of terminology and better aligned with the assessments.

Our Response/Action:

We have addressed the suggestions made by the committee and reduced the learning outcomes of all modules in number and made them more concise in order to better correspond to the programme objectives and the MSc award.

This has resulted from mapping content and objectives of parallel modules per semester to ensure that there are no unnecessary overlaps. There is additionally a more cohesive progression between courses in different semesters. Therefore learning develops accumulatively along vertical research-based threads in the first two semesters and culminates in a consolidated single Research Project

in semester 3. Please also refer to **Appendices A and B**, where the revised learning outcomes are provided.

1.3.2.2. Publications within the discipline. (Indicator: 2/5)

Our Response/Action:

Apart from academic publications, many of the teaching faculty members are also involved in architectural practice and as well as more experimental prototyping testing and design. These are usually carried out as multidisciplinary projects under research funding or industry collaborations and range from material experimentations to structural modelling as well as urban scale interventions.

Nonetheless almost all faculty members have recognized academic qualifications at the highest level (Doctoral Degree or terminal degree as defined by CY law for programmes such as Architecture).

Please refer to the following sections of the “Application for Evaluation–Accreditation” document: faculty specializations as listed in Table 3, synergies between research and teaching as described in Section B10, and faculty publications listed in the corresponding CV’s in Annex 3.

1.3.6. The teaching personnel of each private institution of tertiary education, to a percentage of at least 70%, has recognized academic qualification, by one level higher than that of the program of study in which he/she teaches. (Indicator: 2/5)

EEC Suggestion, Page 19:

At present, there are seven PhD holders and 3 PhD candidates out of 14 members of staff, including the external staff working remotely. This ratio appears slightly lower than the expectation of at least 70%. We strongly recommend that DI.PA.E reconsider this imposed 70% ratio by taking into consideration the previous point about equivalent recognition of professional achievement in practice.

Our Response/Action:

We strongly agree with the recommendation of the committee to DIPAE.

Firstly we consider that it is important to stress the necessity for Architectural practice as a significant part of architectural education. As experienced practitioners all faculty have first-hand experience of application of knowledge through research, project development and on site management and supervision of design projects through practice. Architectural practice is complex and multidimensional and develops knowledge acquired through academic research. This cannot be overlooked in judging the educational maturity of the academic staff.

Additionally, as stated, our programme has 7 PhD holders and 3 PhD candidates. All faculty have recognized academic qualifications at the highest level, either a Doctoral Degree or a terminal degree as defined by CY law for programmes such as Architecture.

1.3.9. The academic personnel's teaching load does not limit the conduct of research, writing and contribution to the society. (Indicator: 2/5)

EEC Suggestion, Page 19:

The university would benefit from giving staff time for research to enable the production of publications and professional design work at an international level. The teaching load is high and effective mechanisms could be holistically implemented to reduce the workload.

The dedication of the existing team and the support provided to students (sometimes disadvantaging their own research work) is commended. Research and project-led teaching would better encourage publication and project production record, especially in early and mid-career staff. In addressing this imbalance between teaching time and research time (by also allocating sabbaticals), the University would strengthen staff outputs and publications and by extension enhance the identity of the programme and attract greater number and higher quality of students.

Our Response/Action:

The publication record of the faculty members clearly indicates that reduced (through RTR) teaching load gives them the opportunity to carry out important research. Furthermore, research and scholarly activities are taken into account when applying for ranking and promotion.

The University has also established procedures for allocating sabbaticals, which help conduct research, writing, and contribution to the society by the academic personnel.

The academic personnel involved in the programme is actively engaged in research. The main strength of the faculty is their dual role as Academics and Practitioners; a role that allows them to act as mediators between academia, the professions and the industry leading to successful and innovative theoretical and practice based research.

Faculty members have diverse architectural research outputs such as installations, experimental projects, workshops, curating, exhibitions, graphic output and architectural practice output, in addition to traditional academic written research outputs.

It is expected that the new format of the third semester module "ARCH-591 DL: Research Project" will enable research and project-led teaching that will build on areas of research currently addressed by the faculty and consequently encourage more publications by the academic personnel.

2. PROGRAM OF STUDY AND HIGHER EDUCATION QUALIFICATIONS

2.1.1. The purpose and objectives of the program of study are formulated in terms of expected learning outcomes and are consistent with the mission and the strategy of the institution. (Indicator: 2/5)

EEC Suggestion, Page 20

We recommend that the Department rethinks the exact description of the programme and the balance between design and science objectives and methods.

EEC Suggestion, Page 21

There are three factors the programme could consider in order to specify its purpose:

- a) its existing strengths at department level (design);*
- b) its desire to bring in a new specialization, related to building science and technology in the area of sustainability; and*
- c) its strategic location in the Southern Mediterranean area.*

Our Response/Action:

The focus of the programme is on sustainable architecture which is developed following a holistic approach to the subject integrating the technological, social and site-specific approaches. It aims to develop critical awareness of the two different but related fields, brought together in a unique context, in which students can explore and appreciate the impact of both sustainable architecture and present and emerging technologies on strong design decisions.

The specific suggestions (a,b,c) made by the committee have already been addressed in the following section of this document: “EEC Suggestion no.1, p.11”

2.1.5. The expected learning outcomes of the program are known to the students and to the members of the academic and teaching personnel. (N/A)

Our Response/Action:

The learning outcomes of the programme are available through the University of Nicosia website. All courses are created to support the learning outcomes of the programme and matrices are constructed to illustrate the support/achievement of the programme’s learning outcomes by the specific courses.

The aims and learning outcomes of the programme are made known to all teaching faculty by the programme coordinator and course leaders, via introductory meetings and distribution of relevant material, highlighting the process of accumulative learning and emphasizing links between courses.

The learning outcomes of the programme and their relation to individual courses are in turn made explicit to the students in the introductory sessions of each module.

2.1.7. The higher education qualification awarded to the students, corresponds to the purpose and objectives and the learning outcomes of the program. (Indicator: 2/5)

Our Response/Action:

This point has already been addressed in section “EEC Suggestion no.2, p.11” of this document.

2.2.2. The European Credit Transfer System (ECTS) is applied and there is true correspondence between credits and workload per course and per semester for the student either he/she studies in a specific program or he/she is registered and studies simultaneously in additional programs of studies according to the European practice in higher education institutions. (Indicator: 2/5)

EEC Suggestion, Page 22:

If the module leader, together with the course coordinator, carefully check that the student work and assessments does not exceed maximum workload allocated to each credit.

Our Response/Action:

The University of Nicosia holds both the ECTS and the Diploma Supplement Label.

All programmes and courses are thus expressed using Learning Outcomes (LOs). Designing of the programme and courses was carried out using the Tuning Methodology and LOs are expressed using Blooms Taxonomy. The number of credits ascribed to each component is based on its weight in terms of the workload students need to achieve the learning outcomes in a formal context.

Regarding the general credit breakdown, the ECTS credit system ensures an overall maximum number of (30) credits per semester. The programme distributes the credits according to the required workload for each module, which are divided equally (10 credits each) in the first two semesters and 30 credits are allocated for the research project in the final semester.

Regarding the individual courses, the workload reflects the level of difficulty of the assignments given. Derived from the learning outcomes, student work and assessments follow the pyramidal structure of the Blooms Taxonomy, where simpler tasks of comprehension and analysis would be allocated less credit value (and therefore less time) than tasks such as problem solving and application of knowledge.

2.2.3. The programme of study is structured in a consistent manner and in sequence, so that concepts operating as preconditions precede the teaching of other, more complex and cognitively more demanding concepts. (Indicator: 2/5)

EEC Suggestion, Page 22:

It is strongly recommended that the research methods module should be compulsory to all students and brought up to the first year of study so that the students are well prepared to undertake the research projects in year 2.

Our Response/Action:

We have followed the recommendations of the committee and introduced the relevant changes. These have already been described in the following sections of this document: “EEC Suggestion no.1, p.11”, “EEC Suggestion no.2, and p.11” and “EEC Suggestion no.3, p.11”. Please also refer to **Appendices A and B.**

EEC Suggestion, Page 22:

The university-imposed standardised assessment weighting approach of 40%/60% is problematic for certain modules-e.g. final research project. It is recommended that some flexibility in assessment structure should be considered for these modules.

Our Response/Action:

We agree with the committee's comment. This is particularly important for the "ARCH-591 DL: Research Project" where the amount and complexity of work carried out by the students should be reflected in a higher weighting of the final assessment.

2.4.5. Information relating to the program of study are posted publicly and include... (the EEC was unable to comment)

Our Response/Action:

This point has already been addressed in section 1.1.3.4. of this document.

2.4.6. The award of the higher education qualification is accompanied by the Diploma Supplement which is in line with the European and international standards. (the EEC was unable to comment)

Our Response/Action:

The University of Nicosia holds both the ECTS and the Diploma Supplement Labels, thus ensuring that all the degrees awarded by the University are aligned with European and International standards.

2.4.8. The recognition and transfer of credit units from previous studies is regulated by procedures and regulations which ensure that the majority of credit units are awarded by the institution which awards the higher education qualification. (the EEC was unable to comment)

Our Response/Action:

The transfer of credits from previous studies towards postgraduate programmes is governed by the University of Nicosia Internal Regulations. Postgraduate students may normally transfer from other accredited institutions a maximum of one third of the Master Degree credits/ECTS.

2.5.3. Students participate in exchange programs. (N/A)

Our Response/Action:

Through institutional and departmental exchange agreements and via the Erasmus+ mobility programmes, students are being offered the opportunity to participate in traineeship and mobility activities abroad. The University of Nicosia Erasmus+ office has been very successful in securing funds from the National Agency, significantly increasing the number of supported student and staff mobility exchanges, and has for the third time in a row secured funds of more than half a million Euros.

2.6.2. According to the feasibility study, indicators for the employability of graduates are satisfactory. (Indicator: 2/5)

EEC Suggestion, Page 26:

Although the programme is expected to have an added value for the society and the profession, as well as for the Department of Architecture, no specific feasibility study has been conducted.

Our Response/Action:

We thank the EEC for acknowledging the added value for the society and the profession that will be brought by our Master programme.

The programme was designed in consultation with external stakeholders, external experts in the field, and in the feedback of the faculty in the Department and experts in the field.

Having assessed the content and structure of other comparable programmes in the field we consider that particular characteristics of our programme stand out as unique characteristics:

- The technological focus under the broader umbrella of ‘sustainable architecture’ is aimed at providing additional qualitative, specific, identifiable and marketable skills and applicable knowledge, which would increase prospective graduates’ employability options.
- The emphasis on research by design, evidenced by the final semester module “ARCH-591 DL: Research Project”. Development of ideas through design is a research methodology which is particularly distinct to this programme.
- This is the only programme of its nature in the geographic area.

We anticipate to have 10-12 students for the first year that the programme will run, who will annually increase up to 50 in 4-5 years time.

3. RESEARCH WORK AND SYNERGIES WITH TEACHING

3.1.3. Adequate and sufficient facilities and equipment are provided to support the research component of the program of study, which are available and accessible to the personnel and the students. (N/A)

EEC Suggestion, Page 27:

This is a distance learning programme. Adequate online facilities, technologies and equipment are provided to ensure that students have access to software and other materials as required. The provision for the research projects could however be clearer so that students are made aware of the potential practical constraints to undertaking projects outside of the range that is feasible and practicable. The distance learning programme provides challenges for teaching and developing research in architecture. The department should consider how to develop discipline-specific mechanisms for teaching in a remote and online mode, without losing the dialogue with physical spaces, and processes of making because these are fundamental to our discipline.

Our Response/Action:

Teaching of the research project provides the biggest challenge for this DL programme as it requires communication between students, faculty-student interaction and continuous supervision of student work. The teaching activities for this course have been structured in such a way as to

safeguard some of the educational mechanisms that are used in a face to face programme but also make active use of the digital platform.

Interactive learning: Exchange of knowledge and ideas between students encourages peer to peer learning and facilitates a creative learning environment. The digital teaching platform will be used to exchange ideas and comments between students through:

- Weekly uploading of student work - this allows students to view progress and development of each other's work, share research information and research methods, provide comments on each other's work and have access to feedback.
- Group discussions - formal peer reviews are also a requirement of the course which are set at particular times in the semester
- Formal presentation of students' work through Group Forums takes place 3 times in the semester, through both videos recordings and live sessions. This will also involve faculty comments and general feedback which is open to the group
- Faculty - student interaction; this takes place regularly and is a significant part of developing dialogue and providing direct feedback on student work.

3.1.4. The results of the academic personnel's research activity are published in international journals with the peer- reviewing system, in international conferences, conferences minutes, publications etc. (Indicator: 2/5)

EEC Suggestion, Page 27:

There is scope for improvement in this area. However, the staff includes a significant number of young academics and it is expected that with the right mentoring and support environment, staff publications and international profile will improve.

Our Response/Action:

We acknowledge and agree with the suggestion by the EEC.

Detailed information about the research output, funding, areas of academic and professional expertise and accomplishments of the faculty is available through their respective Detailed Biographical Notes. Their CVs are included in Annex 3, of the Application for Evaluation–Accreditation, Document. Both the Teaching Research Faculty and the Adjunct Faculty members who support the programme are actively involved in research and highly qualified educators and professionals. Faculty have received many international recognitions and awards for work that they have carried out in practice and research. They are recognized by the academic community as experts in the field, something that can also be seen in section B.6: Academic / Teaching Personnel and their qualifications, of the Application for Evaluation–Accreditation.

It is expected that the research output of the faculty will increase with the introduction of this Master programme, with the research project component becoming compulsory.

Moreover, the University has in place an internal support for faculty research in the forms of: a) funding for conference attendance and training for faculty, b) competitive internal grants to subsidize research, c) library support for research (books, journal subscriptions, professional registrations, etc), d) a Research and Information Office that supports faculty in their efforts to secure external funding.

3.1.6. Internal funding, of the academic personnel's research activities, is compared positively to the funding of other institutions in Cyprus and abroad. (the EEC was unable to comment)

Our Response/Action:

As mentioned above, the University has in place an internal support for faculty research in the forms of: a) funding for conference attendance and training for faculty, b) competitive internal grants to subsidize research, c) library support for research (books, journal subscriptions, professional registrations, etc.), d) a Research and Information Office that supports faculty in their efforts to secure external funding.

4. ADMINISTRATION SERVICES, STUDENT WELFARE AND SUPPORT OF TEACHING WORK

4.3.1. The management and allocation of the financial resources of the program of study, allow for the development of the program and of the academic/teaching personnel. (the EEC was unable to comment)

4.3.2. The allocation of financial resources as regards to academic matters, is the responsibility of the relevant academic departments. (the EEC was unable to comment)

Our Response/Action:

- All Departments at UNIC have an annual budget for consumables, equipment, infrastructure etc. The budget is approved by the University Council based on the report on financial needs prepared by the programme coordinator, department Head and Dean of School. In the past part of this budget for the department of architecture has been used to buy state-of-the-art laser cutters, 3D printers, specialised software etc.

- All Departments at UNIC may make a request for the hiring of new faculty through set procedures in the UNIC Internal Regulations. Proposed new positions are approved by the School, Senate and University Council.

- All faculty members are financially supported for their research (via the Research Time Release procedure), funding for conference attendance, training sessions, library support for research and Erasmus mobilities.

4.3.3. The remuneration of academic and other personnel is analogous to the remuneration of academic and other personnel of the respective institutions in Cyprus. (the EEC was unable to comment)

Our Response/Action:

The remuneration and working conditions of academic and other personnel is in line with the remuneration of academic and other personnel of the other private universities in Cyprus.

4.3.4. Student tuition and fees are consistent to the tuition and fees of other respective institutions. (the EEC was unable to comment)

Our Response/Action:

Tuition fees for all University of Nicosia programmes, are approved by the University Council and are monitored by the Ministry of Education and Culture of Cyprus. In addition, scholarships and deductions on tuition fees are offered every year to a large number of students. The fees of the private Universities in Cyprus are very similar.

5. DISTANCE LEARNING PROGRAMS

5. EEC Suggestion, Page 9:

The following are proposed to be included in a Quality Manual:

The process for the evaluation of faculty members by the students and for the provision of the respective feedback to them.

Our Response/Action:

The University has in place a systematic process for the evaluation of faculty and courses as part of an on-going process of appraisal and improvement.

Each DL course has a course instructor evaluation, in the form of an online assessment questionnaire. The questionnaires are completed by the students and results are collected by the DL Unit and given to the Department and School for action and improvements.

In addition faculty prepare and submit a Self-Evaluation Report (SER). There is a loop mechanism in place by which the results generated by the faculty and course evaluations and by the SER serve as feedback for performance appraisal and for identifying improvement action needed.

The University also has in place the ePSU, e-learning Pedagogical Support Unit, which constantly advises faculty on pedagogical issues.

The procedures for appropriate training, guidance and support provided to teaching staff, to enable them to efficiently support the educational process.

Our Response/Action:

All faculty members in Distance Learning programmes are required to possess a certain level of ICT skills depending on the type of course and specific programme requirements when applicable. The Distance Learning IT unit and the University in general, organize regular Moodle training sessions in order to assist lecturers to design and develop online courses. Individual meetings with the DL Unit are planned for more specific training. Relevant handbooks have been created which provide extensive guidelines to lecturers. Additionally, all faculty are required to undergo training on effective teaching skills, and part of the course include material about adopting ICT from a technological and a pedagogical standpoint.

The student performance monitoring and mentoring processes.

Our Response/Action:

In regard to student performance monitoring mechanisms, DL lecturers communicate to DL academic advisors about those DL students who are not progressing as they should (according to the corresponding learning week, low performance on a coursework etc.). The DL academic advisors contact the DL students directly to identify the reason for their poor performance or lack of participation. Then the DL academic advisors inform the DL lecturers and depending on the reason/s, a collective supporting approach is decided.

The specific process is labelled as 'Monitoring of Students'. The aim is to identify DL students who are facing challenges at the beginning of the semester (3rd - 4th week) as to be able to support them accordingly. By doing so earlier enough within the semester, students are able to demonstrate improvement during the remainder of the learning weeks.

Students' progress is continuously assessed throughout the semester, utilizing various methods and techniques such as physical face to face exams, assessments, quizzes (assessed or not assessed), tests, projects, case studies and forum discussions, all designed based on the Learning Outcomes and aims of the course. Hence, students receive feedback regarding their performance throughout the semester and have the opportunity to address any concerns to their DL Lecturers or/and their Academic Advisors. Through the ongoing feedback DL Lecturers have the opportunity to identify students that may require support. Both formative and summative assessment methods are used.

Student mentoring takes place through online communication. Faculty is requested to make provision for office hours (e.g. 3 hours per week), during which DL students can contact them via telephone, Skype, chat or in person. This information should be also included in the Course Outline. In cases where the specific hours are not convenient for students, faculty should provide the option for communication by appointment.

The procedure aiming at establishing and maintaining assessment consistency, its equal application to all students, and the compliance with predefined procedures.

Our Response/Action:

Assessment methods for each course are clearly indicated in the Course Syllabus, Course Outline and Study Guide which are available to all students. A principal means for maintaining academic standards and soliciting feedback on the standards of student assessment is the peer review of examinations which is an integral and essential part of institutional quality assurance. The final exams and assessment methods are designed and decided based on the learning outcomes to be achieved.

Assessments are additionally monitored by the Programme Coordinator and the Course Leaders. "Course Assessment Guides" for each module have been prepared by Course Leaders and include: a timetable of assessments, submission deadlines, required format and grading criteria. Please refer to **Appendix C** for samples of "Course Assessment Guides".

IV. Conclusions

Once again, we would like to thank the committee for the positive remarks, the constructive comments and suggestions, as well as for the fruitful discussions that we had with its members during the onsite visit. We also thank the committee for the time and effort devoted to the evaluation process and for helping us to improve our programme through the suggestions made. We have already taken action and incorporated all recommendations of the committee as indicated above in our response.

Dr AnTonia Sophocleous-Lemonari
Programme Coordinator

Appendix A: Programme's Intended Learning Outcomes, Structure and Description of Modules

Programme's Intended Learning Outcomes:

Upon successful completion of this programme, students should be able to:

1. Demonstrate knowledge and expertise in sustainable architecture and integrative technologies in relation to the built environment.
2. Reflect on theoretical references underpinning the history and evolution of sustainable development and specialised architectural technology.
3. Implement innovative sustainable architecture and bioclimatic design principles, operating at all scales of the built environment in an ecologically sensitive and climatically responsive manner.
4. Creatively employ the principles of energy-efficiency, structural systems, energy use and production, alternative energy sources use and thermal comfort, in design proposals for the built environment.
5. Critique and reflect on how materials, structural design, construction and environmental modification are integrated in the generation and realisation of the built environment.
6. Analyse the quantitative effects of qualitative design decisions via the introduction of building environmental performance simulation software.
7. Apply integrative approaches and practices towards the improvement of energy efficiency in the existing built fabric.
8. Identify and respond to current regulatory & environmental assessment methods for energy performance compliance.
9. Apply a variety of scientific and creative research methods in the fields of sustainable architecture and integrative technologies.
10. Communicate and defend research and design conclusions clearly to specialist and non-specialist audiences through design projects, research papers and oral presentations.
11. Synthesise specialised knowledge, through innovative cross-disciplinary research and design methods, towards holistic solutions for sustainable practice.

The Updated Programme Structure:

Semester 1		
Course Code	Course Title	ECTS Credits
ARCH-550DL	Advanced Principles of Bioclimatic Architecture	10
ARCH-551DL	Advanced Environmental Integrated Systems	10
ARCH-590DL	Research Methodology	10
Total		30

Semester 2		
Course Code	Course Title	ECTS Credits
ARCH-553DL	Adaptable Structures; Emerging Technologies	10
ARCH-554DL	Energy Efficiency in Buildings	10
ARCH-555DL	Retrofitting existing buildings – upgrading for energy performance compliance	10
Total		30

Semester 3		
Course Code	Course Title	ECTS Credits
ARCH-591DL	Research Project	30
Total		30

Updated description of Modules:

ARCH-550DL - Advanced Principles of Bioclimatic Architecture -10 ECTS:

The module investigates principles of Bioclimatic Architecture and Environmental Modification. It covers a wide range of topics, from understanding climatic data and human comfort, to basic passive heating/cooling strategies, to more complex autonomous / living systems. The aim is to develop an advanced awareness of how materials, techniques in structure, construction and environmental modification are integrated in the generation and realisation of bioclimatic architectural designs. Regional climate, and site-specific microclimates are also examined through literature and practical applications. An overview of the most important issues upon which sustainable planning and design are based, (such as geologic, hydrologic, and ecosystem processes) is also provided. The subject of Building Physics is introduced, especially because the course is targeting different undergraduate backgrounds, within the first two weeks with the aim to better leverage students basic knowledge.

ARCH-551DL - Advanced Environmental Integrated Systems -10 ECTS:

The module focusing on building technology, provides technical guidance and an up-to-date overview of the latest technology in advanced building systems, to meet the complex challenges of integral planning, requiring the interactions of different but related disciplines. The aim is to reinforce the importance of an all-encompassing consideration of the integral parts of the built environment (such as structure, construction, materiality, systems and servicing, aesthetics and human well-being) as equal, as well as virtually indistinguishable. The subject of “heat transfer” is introduced (thermal mass, capacity, isolation, etc.) in order to better prepare students to follow the contents of environmental simulations in semester two.

ARCH-590DL- Research Methodology-10 ECTS:

The Research Methodology module utilises the research advising by a larger part of the faculty and interrelates the contents of all modules from an early stage. The course provides an opportunity for students to understand the foundational methods and techniques of academic research. Students will be exposed to quantitative, qualitative, and mixed methods approaches including problem definition, sampling, surveying, case study analysis as well as methods of analysing and presentation. Various methodological approaches will be examined in order to help students to critically review literature which is relevant to their interests and determine how research findings are useful in forming an understanding of their own work. Students will be equipped with the knowledge and ability to undertake original research projects.

ARCH-553DL - Adaptable Structures; Emerging Technologies -10 ECTS:

Structure is seen as a part of an integrated whole of a building, which evenly supports morphology, construction and energy efficiency. Emerging structural technologies that could be used to better serve the sustainable architectural intention are introduced. Based upon an assessment of the structural behaviour, students will propose a unique form suitable for adaptable structure towards

an optimum structural efficiency, construction realization and sustainable (i.e. energy) performance. Structural simulation is explained for the students to qualitatively analyse the quantifiable results from a suitable structural analysis software. Students are not asked to undertake structural analysis. Structural systems related to the application of technology advancements in terms of specialized typologies such as kinetic structures are taught that could be used in advanced design proposals that utilise research results in this architecture technology specialization.

ARCH-554DL - Energy Efficiency in Buildings -10 ECTS:

The module aims at providing a comprehensive grounding on topics of energy efficiency in buildings. Topics addressed include envelope design, energy use and production, energy efficient technological systems, alternative energy sources and indoor/outdoor environmental quality. An overview of how sustainable designs are assessed from a regulatory point of view will be introduced in order for the set out policies to be implemented. Environmental simulations based on the building physics already introduced in semester one are used as a tool for the students to understand the application of computation benefits, through a series of exercises, examples and projects presentations. Regional climatic conditions are considered.

ARCH-555DL - Retrofitting existing buildings – upgrading for energy performance compliance -10 ECTS:

The module aims to introduce retrofitting strategies appropriate to maintain a balance between the need for energy savings and the character of the original building fabric. Integrated retrofit analysis approaches are employed in order to explore and evaluate holistic solutions and practices to improve energy efficiency in existing buildings.

ARCH-591DL- Research Project-30 ECTS:

The Research Project module allows students to specialise in a subject of their interest that fits within the ongoing research of the programme. The module is an individual research project in which students demonstrate that they have acquired the relevant competences to plan and realise independent study within chosen area.

The research project integrates an advanced level of technologies through the development of an architectural design project or a written thesis. The module is intended to both enhance theoretical knowledge and develop practical applications through a highly resolved architectural solution.

Through either written or design work, projects must demonstrate evidence of methodological rigour and scientific and creative achievement as well as an awareness of context of theories and practices in the chosen area of study. The module intends to provide students with an opportunity to apply appropriate theoretical concepts to projects, providing an innovative and critical approach. Students should demonstrate problem solving skills through innovative design solutions and development and knowledge of regional architecture.

Students' research projects are supervised by faculty with appropriate expertise.

Appendix B: Modules' Intended Learning Outcomes

MSc Sustainable Architecture and Integrative Technologies: Learning Outcomes: Upon completion of the course, the student is expected to:

Semester 1		
ARCH-550 DL Advanced Principles of Bioclimatic Architecture	ARCH-551 DL Advanced Environmental Integrated Systems	ARCH-590 DL Research Methodology
ECTS 10	ECTS 10	ECTS 10
<ol style="list-style-type: none"> 1. Recognise, interpret and apply key concepts of bioclimatic architecture and environmental modification. 2. Demonstrate historic and theoretical references underpinning bioclimatic architecture. 3. Appraise, critique and judge issues of sustainability relating to building performance. 4. Identify and illustrate established passive environmental strategies, systems and their respective characteristics. 5. Examine and analyse published text/ drawings in relation to bioclimatic architecture strategies and tactics. 6. Interpret how materials, techniques in structure, construction and environmental modification are integrated in the generation and realisation of bioclimatic architectural design. 7. Explain the complex and diverse relationship between ecology and technology. 	<ol style="list-style-type: none"> 1. Develop an inventory of integrated strategies for indicative built environments. 2. Demonstrate an awareness of historic and contemporary theories surrounding the subject of systems for the built environment. 3. Interpret and critique case studies. 4. Demonstrate an understanding of building technology through the study of sustainable strategies. 5. Identify, recognise and integrate systems of construction, and passive and active elements such as HVACs, plumbing and electrical. 6. Demonstrate knowledge of essential building installations and systems. 7. Make judgments through checking and critiquing to develop an advanced and highly personalised attitude towards systems integration. 	<ol style="list-style-type: none"> 1. Demonstrate an understanding of a variety of research methods, including survey research, interviewing, participant observation, case studies, comparative analysis, and of the use of documentary/primary sources; 2. Justify a stand or decision concerning their own research and methodology. 3. Demonstrate awareness of the ways in which choices of methodology are closely linked to broader theoretical and conceptual issues. 4. Judge and assess the appropriateness of different methodologies and types of evidence to test alternative hypotheses and to construct various arguments; 5. Describe and classify the qualitative and quantitative approaches to research design 6. Explain ideas or concepts that are related with literature or empirical based research

		<p>7. Compare and organise evidence, and verify the authenticity of information and the sources.</p> <p>8. Assess their methodology by making visual representations and by producing images.</p> <p>9. Apply knowledge and use information provided, in a new situation</p>
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Semester 2		
ARCH-553 DL Adaptable Structures; Emerging Technologies	ARCH-554 DL Energy Efficiency in Buildings	ARCH-555 DL Retrofitting existing buildings – upgrading for energy performance compliance
ECTS 10	ECTS 10	ECTS 10
<p>1. Define adaptability in architectural form by observing the characteristics of designs and defining the requirements of related architectural intention.</p> <p>2. Identify the governing design principles within the context of holistic design in terms of architecture technology, and list the fundamentals of sustainable, adaptive structures.</p> <p>3. Recognise “adaptable” structural systems and locate related publications (journal articles, monographs, chapters, or books) during a search in designated resources.</p> <p>4. Develop awareness of the architectural, spatial, and sustainable potential of deployable structures.</p>	<p>1. Explain how sustainable designs are assessed from a regulatory point of view</p> <p>2. Apply appropriate environmental technologies and design strategies to satisfy environmental specifications of design propositions.</p> <p>3. Identify design strategies in relation to envelope design, energy use and production, energy efficient technological systems, alternative energy sources and indoor/outdoor environmental quality</p> <p>4. Describe how energy efficiency relates to issues of energy management, light, temperature, air quality, thermal comfort and psychological aspects of structures.</p> <p>5. Identify and evaluate the main international</p>	<p>1. Illustrate knowledge of historic and contemporary theories on issues of sustainably preserving continuity in the built environment.</p> <p>2. Analyse, and critique retrofitting case studies, through text and diagrams</p> <p>3. Appraise possibilities for building technology upgrading through the study of sustainable strategies.</p> <p>4. Identify, recognise and integrate systems of construction, as well as passive and active elements such as HVACs, plumbing and electrical in existing buildings.</p> <p>5. Illustrate knowledge of essential building installations and their appropriate interactive installation in historic and</p>

<p>5. Identify scissor typologies reviewing literature and reproduce their form and structural characteristics in clear sketches.</p> <p>6. Predict through case studies, the mechanical behavior, observing the relationship between action and deformation of structures to construct diagrams that show the related function and/or variation.</p> <p>7. Analyse and develop adequately kinetic mechanisms to carry out assessments of the design potential.</p> <p>8. Explain the diagrams for the structural behavior to produce a rationale associated with the ideal structural models for analysis to prepare sketches.</p> <p>9. Define the structural problem and identify the critical parameters in order to work towards a solution.</p> <p>10. Demonstrate the skills to clearly and concisely document technical information; including tables, charts, calculations, schematic drawings, scale plans, and supporting text.</p>	<p>environmental assessment methods and rating systems (such as BREEAM, Code for Sustainable Homes, LEED, Passive House certification and GSAS).</p> <p>6. Apply building environmental performance simulation software, such as Ecotect, Fluent, EnergyPLUS, IES VE and Tas.</p> <p>7. Demonstrate how sustainable designs are assessed from a regulatory point of view.</p>	<p>listed buildings through sustainable strategies.</p> <p>6. Compile a personalised attitude towards retrofitting for energy performance compliance.</p> <p>7. Use appropriate environmental technologies and design strategies to satisfy environmental specifications of design propositions.</p> <p>8. Assess sustainable retrofitting designs from a regulatory point of view.</p>
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Semester 3
ARCH-591 DL Research Project
ECTS 30
<ol style="list-style-type: none"> 1. Identify and evaluate new ideas for a sustainable future, or revisit and modify familiar problems but with a new vision and understanding of the environmental potential. 2. Propose a subject for advanced research based on a clearly-defined research question. 3. Outline methods of inquiry and criticism on current practices and new insights in the field of Sustainable Architecture and Integrative Technologies. 4. Compare & analyse existing literature or case studies in support of the research project, making use of the course material and identifying other relevant resources for the preparation and design of the research project. 5. Formulate, interpret and communicate appropriate concepts and case studies derived from contextual studies and theoretical research. 6. Provide reliable, well supported evidence, analysis and development in support of the research topic. 7. Analyse, in a 2500 word report the research methodology, findings and conclusions of the critical inquiry prepared. (The report should also include a clearly structured proposal outlining further research aims and activities specifying whether the project will be carried out as a design project or written thesis). 8. Apply and synthesise specialised knowledge into the design of Sustainable Architecture and Integrative Technologies, relative to the field of concentration. 9. Produce a 15,000 word essay or a well communicated, fully resolved design project of a publishable quality that can educate and inform a wider professional community

Appendix C: Sample Course Assessment Guides

C.1. Sample 1 of Course Assessment Guides.

ARCH-551DL Advanced Environmental Integrated Systems

Course Assessment Guide

Lecturers: Adonis Cleanthous & Markella Menikou

Course assessment has as follows:

- 12 weekly assignments – 30%

[The weekly assignments consist of the “Inventory of Strategies”, the “Summary Report”, “Peer-review exercises”]

- Midterm assessment - 10%

[Preliminary submission of required accumulated assignments]

- Final exam – 60%

[Final submission of required assignments / end-of-semester submission of weekly accumulated work, re-worked into a cohesive document of publishable quality]

Assignment 1 -Inventory of Strategies

- *Scope of the Assignment:*

The “Inventory of Strategies” is a major assessment component for the course.

Students are expected to evidence comprehension of material presented and the ability to bring knowledge gained into personalised, individual strategies towards sustainable built environments by creatively integrating building systems.

The inventory will be incrementally compiled through weekly submissions.

- The weekly submissions will respond to the subjects corresponding in the specific week’s given reading and activities.
- The weekly submissions will be assessed and feedback will be given one week after the submission deadline.
- The accumulated submissions will be thereafter further advanced, responding to feedback and new knowledge and submitted at midterm and final examination as a comprehensive inventory of strategies.

This is an assessed piece of coursework towards an accumulated 30% of the ARCH-551DL module. (12 weekly submissions)

- *Assignment Rules and Guidelines:*

The “Inventory of Strategies” will be compiled by selective, intersecting categories and subdivisions of principal areas of sustainable building design.

The following table is provided as a primary base, but you are expected to further elaborate by adding more detailed subcategories in a bifurcating manner:

Sample Inventory Structure

STRATEGIES

A. Planning B. Structure C. Energy Plan D. Services E. Materials

A Planning

1. Massing 2. Envelope 3. Environment 4. Climate 5. Inner Layout 6. Comfort

B Structure

1. Concrete 2. Wood 3. Steel 4. Masonry 5. Hybrid

C Energy Plan

1. Renewable
2. Input
3. Conversion
4. Storage
5. Distribution
6. Output

D Services

1. Heating/Cooling
2. Water Hot/Cold
3. Waste Water
4. Electricity
5. Air Ventilation
6. BMS

E Materials

1. Construction
2. Performance
3. Life-cycle
4. Waste

Example for individual student customisation of the basic template:

According to the above Sample Inventory Structure, the code A-5 (Planning/Inner Layout) could be further detail led with:

- a. thermal mass walls
- b. lightweight sliding walls
- c. minimum footprint
- d. linear maximum insulation
- e. compact volume minimum envelope
- f. acoustic isolation

In some instances, further detailing of the strategies may be necessary. For example:

- a. thermal mass walls: solar gains during daytime; night-time cooling; or,
- f. acoustic isolation: exterior sources; between interior rooms

According to the above example, you may have a number of strategies by selecting one of the bifurcating categories:

A-5-a-ii: Planning/Inner Layout/Thermal Mass Walls/Night-Time Cooling
and/or

A-5-f-i: Planning/Inner Layout/Acoustic Isolation/Exterior Sources

In addition, and following the integrative logic of the course, individual strategies need to be intelligently intersected to produce unique, sustainable building systems. For example:

“Thermal mass walls for night-time cooling – evaporative cooling through drying laundry, massive concrete and hay-bales envelope.”

The aim of integrating systems should be two-fold:

- a. one strategy may serve a multitude of sustainable outputs;
- b. different strategies may work together in synergy.

Some strategies may appear in the inventory as ‘stand-alones’ and later be reworked with other ‘stand-alone’ strategies and reappear as inter-crossed or composite strategies. As the semester proceeds week by week, more ‘inter-crossed’ strategies should be developed and submitted. All

new knowledge gained should be incrementally accumulative and evident in the inter-crossed and synergetic strategies that increase sustainable output (performance) in buildings.

- *Format of Submission:*
 - Each weekly submission will contain a minimum of five (5) strategies.
 - Each strategy will have the following components:
 1. Code number referring to the student’s inventory structure (e.g. A-5-f-i).
 2. Title of the strategy (e.g. Planning/Inner Layout/Acoustic Isolation/Exterior Sources)
 3. Brief description of the strategy (or inter-crossed/composite) using a minimum of 200 and a maximum of 300 words to clearly define the strategy.
 4. A drawing (diagram) illustrating the strategy clearly and communicatively with accompanying necessary annotations. The drawing (diagram) may be of a type appropriate to the strategy. A sectional isometric at a full-floor height is commonly most communicative but other types of drawings may also apply. These might be 3D isometric plans, overall sections, zoom-up details or zoom-down overall assemblies.
The drawings need to be originally executed by the student taking the cues from the given bibliography.
No reiteration of standard and universal conventions will be acceptable submission.
Students need to go well beyond understanding the convention and propose complex, multi-layered, unique and innovative strategies.
 - All work submitted (both graphic and written output) needs to be original and the student’s own work. Cheating and plagiarism regulations will apply in cases where work submitted is not appropriately cited/credited or otherwise.
 - Each weekly submission will be in the format of the template provided. You must use the PowerPoint Template provided on Moodle. The final presentation should be saved in *.PPTX, *.PDF and *.WMF format uploaded on Moodle (courses.unic.ac.cy).

Assessment criteria for “Inventory of Strategies” weekly submission:

- | | |
|--|-----|
| • Evidence of comprehension of material presented | 15% |
| • Graphic and communication clarity (drawing/annotations) | 30% |
| • Clarity of written communication, correct use of language and appropriate technical and theoretical terminology (brief, written description) | 15% |
| • Innovative and unique integration of sustainable strategies | 40% |

Please note that particular emphasis is placed on developing innovative and unique integration of sustainable strategies. This implies an excellent understanding of conventional approaches to sustainable building system strategies, but re-proposed in integrative and multi-performative new strategies.

Assignment 2 -Summary Report

Intro:

The “summary report” assignment will be developed via a Wiki activity on Moodle. (courses.unic.ac.cy).

Directions for setting up a Wiki:

- Students should refer to the Wiki section under the general course information in Moodle platform.
- Each student should set up a personal Wiki.
- This Wiki will be accessed by the respective student and the lecturer.

“Summary Report “Assignment Brief:

- Students should compile a weekly written summary on given readings and presentation material.
- This should consist of 500 words long written summary, accompanied by relevant extracted images from the given material (each respective week) and other relevant case studies.
- Each weekly summary report should be submitted by the following section as a Wiki entry on Moodle (courses.unic.ac.cy).

The process is cumulative and students should be revising their Wiki content on a regular basis. The accumulated summary report will be re-evaluated at midterm assessment and final exam.

At both midterm assessment and final exams the latest version of the Wiki content should also be submitted in a *.PDF format uploaded on Moodle (courses.unic.ac.cy).

Midterm Assessment (Live WebEx Session)

[Preliminary submission of required accumulated assignments]

In Section 7 students will participate in a **Live WebEx Session**.

1. Students should submit the accumulated “Summary Report” assignment in a *.PDF format uploaded on Moodle (courses.unic.ac.cy). [the latest version of the Wiki content]
2. Students should submit the accumulated “Inventory of strategies” assignment in a *.PDF format uploaded on Moodle (courses.unic.ac.cy).
3. Students should present the “Inventory of strategies” assignment in a summarised and conclusive manner.

The presentation should be recorded and should be limited to 20 digital slides x 20 seconds per slide which results in a total time of 6.6 minutes. PowerPoint will be used as the presentation software and ONLY Pictures and Text should be used. The presentation will run automatically and NO pauses will be allowed. Therefore you need to use the Midterm PowerPoint Template provided on Moodle. The final presentation should be saved in *.PPTX, *.PDF and *.WMF format uploaded on Moodle (courses.unic.ac.cy). An example of a similar format (20x20) presentation can be found at: <http://www.pechakucha.org/presentations/transformer-apartment>

Final exam

[Final submission of required assignments / end-of-semester submission of weekly accumulated work, re-worked into a cohesive document of publishable quality]

1. Students should submit the accumulated final “Summary Report” in a *.PDF format uploaded on Moodle (courses.unic.ac.cy). [the final version of the Wiki content]
2. Students should submit the accumulated final “Inventory of strategies” in a *.PDF format uploaded on Moodle (courses.unic.ac.cy).

C.2. Sample 2 of Course Assessment Guides.

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES
ARCHITECTURE DEPARTMENT

MSc SUSTAINABLE ARCHITECTURE AND INTEGRATIVE
TECHNOLOGIES

Course Assessment Guide

**ARCH-553DL: Adaptable Structures;
Emerging Technologies**

Dr AnTonia Sophocleous-Lemonari

Summative Assessment	Weight (Percentage)
Exercise 1	5%
Exercise 2	5%
Project Assignment	30%
Final Exam (Submission)	60%

Summative Assessment	Assigned	Due to
Exercise 1 (workload: 30hrs/total)	Week 7	Week 9
Exercise 2 (workload: 30hrs/total)	Week 9	Week 11
Project Assignment (workload: 160hrs/total)	Week 5	Week 13

Workload: 10ECTS Module. 25-30 hrs. /ECTS (Bologna): total: 250-300hrs. (20hr/week)
Summative Assessments: max. 220hrs/total

Project Assignment (30%)

Assigned at Week 5

Submission Deadline: Week 13

Weight: 30% (of the total mark)

PROJECT BRIEF: GENERAL DESCRIPTION

In the context of cultural events of the University of Nicosia in the city center, the development of a building structure is required which can accommodate activity exhibitions on related topics. The building unit is proposed to have a total area of 700 m², including sanitary facilities 50 m², technical support 15 m², and storage of technical equipment 15 m²: These areas have been approximated to meet the respective operational needs of the unit. Design proposals should refer to a single functional building, which will consist of linear elements in its structural structure and its envelope. The structural structure of the steel building aims at reducing weight and achieving the required rigidity of the system in relation to the other design parameters and the morphology of the building. The building design of all structural elements and their connections should favor the standardization of the structure and the possibility of adapting (i.e. extending) the building. The building envelop combined with the energy proposal, is expected to bring users the necessary comfort, and to fulfill on the basis of the proposed functionality of the spaces visual transparency and the necessary sun protection.

REQUIRED (to be developed collectively in 8 weeks)

1. Floor plans, sections, elevations of the building 1:200
2. Sections of the structural structure: 1:50
3. Structural system with preliminary static analysis and dimensioning of the elements
4. Three-dimensional representation of the structural system
5. Building details of the building structure and the envelop 1:5, 1:1
6. Energy proposal

Each of the above designs is requested in A1 paper size and in electronic form (pdf), as well as study documentation based on the above in A3 (zoom out) max. 15 pages, with reference to the development of the proposal and the dimensioning of the structural elements. EXAMPLES OF DELIVERABLES CAN BE FOUND ON MOODLE

PROJECT DEVELOPMENT ACTIVITIES (WEEKLY ANALYSIS)

- **WEEK 5 SUMMATIVE (GRADED) ACTIVITIES (BRIEF INTRODUCTION)**
- **Project Assignment (30%):** Study the brief and the Course Assessment carefully.
- Identify the areas of exploration for the project assignment

- **Summary of Week 5 Activities:** Phase of deduction: Case study analysis on Bending-active systems. Project-based learning explained.
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- **WEEK 6 SUMMATIVE (GRADED) ACTIVITIES (CONCEPTUAL IDEA)**
 - **PREPARE A LIST OF THE DESIGN PARAMETERS; IDENTIFY THE CRITICAL PARAMETERS**
 - **SHOW THE CONCEPTUAL INITIAL IDEA AND PRODUCE SKETCHBOOK**
 - **SKETCH A FREE BODY DIAGRAM AND AN IDEAL STRUCTURAL MODEL.**
 - **PUBLISH YOUR WORK IN THE PORTFOLIO.**
 - **STUDENTS PORTFOLIO: FIND EXAMPLES OF PREVIOUS STUDENTS WORK FOR CONCEPTUAL IDEAS; START THE STUDENTS' PORTFOLIOS. PUBLISH YOUR SKETCHBOOK**
 - **Summary of Week 6 Activities:**
 - Phase of deduction. Group and individual tutorial focusing on the discussion and critique of the initial proposal about the form and configuration of the proposal. Project-based learning.
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- **Week 7 Summative (graded) Activities (Preliminary Investigation)**
 - **Assign Exercise 1:** “Analyse the initial ideal structural model for preliminary structural analysis to yield the associated results”, as follows
 - **STUDENTS PORTFOLIO: FIND EXAMPLES OF PREVIOUS STUDENTS WORK FOR PRELIMINARY INVESTIGATION. PUBLISH YOUR WORK IN THE PORTFOLIO**
 - **Summary of Week 7 Activities:** Phase of deduction. Analysis. The inquiry of analysing challenging designs is investigated. Analysis is seen as the process of inspecting, transforming, and modelling information, by converting raw data (i.e. form and configuration) into actionable knowledge (i.e. structural behavior), in support of the decision-making process.
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- **Week 8 Summative (graded) Activities (Alternatives and Optimum solution)**
 - Prepare ideal structural models based on the results from the preliminary investigation of your project idea for an adaptable structure.
 - Analyse the ideal structural model for the alternatives, to yield the associated results.
 - Finalise your choice for the optimum solution for adaptable structure project.
 - **Students Portfolio:** Find examples of previous students work for Alternatives and Optimum solution. Publish your work in the portfolio.
 - **Summary of Week 8 Activities:** Phase of deduction. Tutorial to enhance production. Analysis of alternatives. Decide on optimum solution. The principals of adaptable structures designs are clarified through analytical investigations of differing configurations.
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- **Week 9 Summative (graded) Activities (Structural Members' Sections)**

- **Assign Exercise 2:** “Prepare detailed construction drawings for the selected parts/joints of your proposal”
 - Upload your work for Exercise 1 to get feedback.
 - Follow the corrections provided by the lecturer.
 - Finalise detailed construction drawings for the selected parts/joints of your proposal
 - **Students Portfolio:** Find examples of previous students work for Structural Members’ Sections. Publish your corrected work in the portfolio.
 - **Summary of Week 9 Activities:** Phase of deduction. Construction of the adaptable structure/system is realised through the sizing and assigning sections/profiles to the members.
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- **Week 10 Summative (graded) Activities** (Structural system design and drafting)
 - Prepare a draft for the final presentation
 - Produce the report for the project.
 - Publish your presentation on the “portfolio”
 - **Students Portfolio:** Find examples of previous students work for (Structural system design and drafting). Publish your report on the “portfolio”
 - **Summary of Week 10 Activities:** Phase of deduction. The design of the adaptable structure is finalized. Report for the structural behavior results is created.
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- **Week 11 Summative (graded) Activities** (Connection Detail Design)
 - Assigned releases to the linear members that composes the structural model for the optimum finalized model
 - Assigned restraints and/or constraints where necessary in the structural model.
 - Design and check the simulation model to finalize the drawing of the industrial sections (i.e. profiles) and their connections’ details in construction drawings.
 - Finalise the design and drafting of the structural system and connections.
 - Include appropriate drawings as part of the project’s final presentation
 - Include appropriate drawings as part of the project’s final report.
 - **Students Portfolio:** Find examples of previous students work for Connection Detail Design. Publish your work for the connections detail design on the “portfolio”.
 - **Summary of Week 11 Activities:**
 - Phase of deduction: The design solutions in construction detailing are explained in relation to the respective affecting parameters of decision.
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Week 13:

Publish your final work on the “Workshop”/ Students Portfolio [both of the final presentation panels and the report] on Moodle in week 13.

Follow the chat activity in week 13 to have a real-time synchronous discussion with the teacher.

This final activity aims to help students prepare for the final exam/submission.

Summary of All Weeks Activities:

Both a great concern and an interesting challenge in investigating new proposals, which may integrate inventive engineering technology and the process of construction into architectural design concerned with the logic of the structure and the reduction of energy use, are realized.

REQUIRED BOOK

1. BUILDING SUPPORT STRUCTURES, 2nd Ed.: Analysis and Design with SAP2000 Software Kindle Edition; by Wolfgang Schueller (Author) ; <https://www.amazon.com/Building-Support-Structures-2nd-Ed-ebook/dp/B016X9P48E>; (Find the required book as already uploaded on module's page (Moodle) for your ease/ also available as pdf).

SUPPORTING VIDEOS/ TUTORIALS

(Find the supporting videos as already uploaded on module's page (Moodle)).

- 1.1. <https://www.youtube.com/watch?v=2povDdw2pTQ>; SAP2000 - 01 Introductory Tutorial: Watch & Learn
- 1.2. <https://www.youtube.com/watch?v=Ck1-a4asRhA>; SAP2000 - 02 Select Commands: Watch & Learn.
- 1.3. <https://www.youtube.com/watch?v=aLCMgOP6pmw>; SAP2000 - 03 Draw Commands: Watch & Learn.
- 1.4. https://www.youtube.com/watch?time_continue=13&v=JkhYzTtwsKE; SAP2000 - 09 Tension-only Bracing: Watch & Learn.
- 1.5. <https://www.youtube.com/watch?v=xXZ77VoCZO8>; SAP2000 - 16 Cable Objects: Watch & Learn.
- 1.6. https://www.youtube.com/watch?v=cBcXoluzC_8; Tutorial SAP 2000 v10 - Cable Bridge.
- 1.7. <https://www.youtube.com/watch?v=LYEUiozZgj8>; Stay Tuned! Practical Cable Stayed Bridge Design
- 1.8. https://www.youtube.com/watch?time_continue=11&v=SFNS22hUObk ; SAP2000 - 15 Creating Reports: Watch & Learn.

BOOKS FOR FURTHER READING

1. Schulitz, H.C., Sobek, W., Habermann, K.J., STEEL CONSTRUCTION MANUAL, Birkhaeuser Verlag, Basel, 1999
2. Schittich, C., Staib, G., Balkow, D., Schuler, M., Sobek, W., GLASS CONSTRUCTION MANUAL, Birkhaeuser Verlag, Basel, 1999
3. Herzog, T., Krippner, R., Lang, W., FAÇADE CONSTRUCTION MANUAL, Birkhaeuser Verlag, Basel, 2004

4. DETAIL. Individual issues on Structures and Construction. (www.detail.de/books)

ASSESSMENT /EVALUATION METHOD/ RUBRIC FOR PROJECT

The objectives of the evaluation are to:

1. Measure whether or not the learning objectives/outcomes are being met.
2. Gather information in order to make judgments about learners' performance.
3. Compare a learner's performance with other learners, with a set of standards to determine a grade or a decision regarding overall success.
4. Assign a final grade to the assignment

RUBRICS EXAMPLE	Excellent	Very Good	Good	Needs Improvement	Unacceptable
1. Design principles, techniques and methods. STRUCTURAL DESIGN	Demonstrate a systematic and critical understanding of structural design principles, in order to research and innovate for the purposes of optimising decision making in the specialised area of <u>Adaptable Structures</u>	Demonstrate a detailed understanding of the application of structural design principles, techniques and methods to address factors including but not limited to <u>user and market needs, quality, environmental impact, integrated design, safety,</u> relating to <u>Adaptable Structures.</u>	Demonstrate an understanding of the application of structural design principles, techniques and methods to address factors including but not limited to <u>user needs, environmental impact, integrated design,</u> relating to <u>Adaptable Structures</u>	Demonstrate an awareness of structural design principles, techniques and methods relating to <u>Adaptable Structures.</u>	Not fulfilling the structural design requirements
2. Design principles, techniques and methods TECHNOLOGY TRANSFER	Demonstrate a critical understanding of the design implications of construction technology and materials sufficient to	Demonstrate a detailed understanding of the evolution of structural design and technology and the	Demonstrate an understanding of the evolution of structural design and technology and the	Demonstrate an awareness of the evolution of structural design and technology.	No evidence of technology/tyologies transfer

	respond innovatively to the design brief.	relationship between them.	relationship between them.		
3. Design principles, techniques and methods DESIGN FACTORS	Demonstrate a critical understanding of the <u>impacts</u> and <u>transformative potential</u> of a variety of structural design solution alternatives in the building performance design process within an integrated approach.	Appraise structural design factors to <u>collaboratively develop and integrate structural solutions</u> , including but not limited to structural, system and specialised typologies activities in the building design process.	Demonstrate an understanding of structural design factors and the <u>development and integration</u> of structural solutions , including but not limited to structural, system in the building design process.	Demonstrate an awareness of the structural design factors required to <u>develop, resolve and integrate</u> structural conceptual proposal in the building design process.	Not considering suitable structural design factors
4. Knowledge Kind	A critical awareness of current problems and/or new insights, generally informed by the forefront of the field of structural design knowledge.	Detailed knowledge and understanding in one or more specialised typologies, at the current boundaries of the fields of integration.	Recognition of limitations of current knowledge and familiarity with sources of new knowledge; integration of concepts across a variety of design requirements	Some theoretical concepts and abstract thinking, with significant underpinning theory	Not sufficient demonstration of background knowledge
5. Information and communication	Demonstrate a systematic knowledge of the means of effective transfer of <u>research, experiences, insights, and</u>	Demonstrate detailed knowledge of the necessary verbal and non-verbal skills to <u>communicate effectively</u>	Demonstrate knowledge of the necessary verbal and non-verbal skills to <u>communicate effectively</u> in the context of	Demonstrate knowledge of the conventions for <u>communicating structural design intentions</u> to	Not sufficient communication of the structural design intention.

	<p><u>knowledge</u> among different structural design experts and professionals.</p>	<p>in the context of structural design <u>project proposals</u></p>	<p>structural design <u>projects conceptual ideas.</u></p>	<p>peers through verbal and non-verbal means.</p>	
<p>6. Information and Communication</p>	<p>Produce a portfolio of construction detailed drawings and technical report.</p>	<p>Produce a portfolio of the necessary drawings and written description.</p>	<p>Produce a sketchbook of free hand sketches, diagrams and initial drawings in the context of a design process.</p>	<p>Produce free hand sketches, drawings and diagrams in support of the design process.</p>	<p>Not sufficient use of communication tools</p>
<p>7. Applying structural design for adaptable structures and emerging technologies PRINCIPLES APPLICATIONS</p>	<p>Select from complex and advanced skills in structural design to research, develop and apply new and innovative skills relating to emerging technologies/typologies and structural systems to his/her design proposals for adaptable structure.</p>	<p>Research, evaluate and apply existing, new and innovative technologies/typologies and structural systems to his/her design proposals for adaptable structure.</p>	<p>Evaluate and apply existing, new and innovative technologies/typologies and structural systems to his/her design proposals for adaptable structure.</p>	<p>Apply, under direction, current technologies/typologies and structural systems to his/her non-complex design proposals for adaptable structure.</p>	<p>Not sufficient application of adaptable structural design principles.</p>
<p>8. Applying structural design for adaptable structures and emerging technologies RESPONSE AND</p>	<p>Research, evaluate and develop a structural design <u>innovation</u> that addresses architectural performance criteria for sustainability principles and</p>	<p>Generate a structural design <u>response</u> that addresses architectural intent for sustainability and integrated design principles.</p>	<p>Develop a structural design <u>response</u> that addresses architectural intent for sustainability and integrated design principles.</p>	<p>Contribute to the development of a structural design <u>response</u> that addresses architectural intent for sustainability and integrated</p>	<p>Insufficient Response</p>

INNOVATION	integration needs.			design principles.	
9. Applying structural design for adaptable structures and emerging technologies DOCUMENTATION	Identify factors affecting project implementation, negotiate, develop and apply documentation relating to the critical evaluation of the interdisciplinary integrated design requirements.	Identify factors affecting project implementation, apply documentation relating to the understanding of the interdisciplinary integrated design principles.	Identify factors affecting project implementation and develop project documentation.	Produce, under direction, appropriate project documentation.	Not sufficient documentation
10. Response to brief	Demonstrate a critical understanding of a variety of Innovative structural design processes and solutions when developing and addressing complex design briefs and unseen situations.	Demonstrate a detailed understanding of a variety of structural design principles, processes and technologies in the context of complex design briefs.	Demonstrate knowledge of a variety of structural design principles, processes and technologies in the context of design briefs of medium complexity.	Demonstrate knowledge of a range of structural design principles, processes and technologies in the context of non-complex design briefs.	Wrong interpretation of the brief
11. Competence - Insight	Scrutinise (examine closely and thoroughly) and reflect on the role of structural design to sustainable architecture and integrated unified	Act with consciousness that adaptable structural design have significant impact on the sustainable architecture development and integrated	Reflect on the influence of the adaptable structural design on the sustainable architecture development and integrated demands.	Demonstrate awareness of current structural concerns, their changing nature and their interaction with the built environment.	Not sufficient demonstration of competence

	demands and act to change these where appropriate.	unified demands.			
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Exercise 1 (5%)

Assigned at Week 7

Submission Deadline: Week 9

Weight: 5% (of the total mark)

EXERCISE 1 DESCRIPTION (5%)

Students will analyse their structural design proposal, following the indicative steps of procedure, to produce results for the structural behavior in support of the decision-making process. They will carry out a preliminary analysis, following the learning tutorials for analytical investigations of alternative proposals. Based on the interpretation of the analysis results they will decide on the optimum proposal. Their final proposal will be both analysed and designed to yield the results on which the members sizing (Exercise 2) will be based.

EXAMPLES OF DELIVERABLES CAN BE FOUND ON MOODLE

Exercise 2 (5%)

Assigned at Week 9

Submission Deadline: Week 11

Weight: 5% (of the total mark)

EXERCISE 2 DESCRIPTION (5%)

With this exercise students will realise their structural solution into construction. They will decide on the final assignments of member's sections/profiles and they will prepare detail drawings. Construction detail drawings will also be developed in 1:25, 1:20 and 1:10 scale for selected joints of the structural skeletal system. Proposals for envelop design will be suggested at a conceptual level.

EXAMPLES OF DELIVERABLES CAN BE FOUND ON MOODLE IN THE RESPECTIVE WEEKS' LEARNING MATERIAL.