



جامعة فاروس بالإسكندرية
Pharos University in Alexandria

“Sustainability Transformations In Pharos University”

NOVEMBER 30-2019

An Interim Report

By

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Project coordinator



THE GLOBAL GOALS
For Sustainable Development

*Responding to The Global
Goals of Sustainable
Development*

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Part 1. Introduction and key Concepts

1. Introduction

Scholars and policy makers are becoming increasingly interested in the processes that lead to transformations toward sustainability. Through their pivotal and influential role in society, universities are key stakeholders in achieving a sustainable future (Cortese, 2003). As respected thought leaders, universities have opportunities to elevate the importance of sustainable development (SD) through scholarly and public discourse. In addition, universities have the opportunity to provide their communities with graduates who have the knowledge and skills necessary to help transform their workplaces and live as responsible global citizens (Ferrer-Balas, et al., 2008).

Universities around the world are responding to these opportunities and beginning to engage in activities related to SD, whether through campus “greening”, development of special courses on sustainability, or offering collaborative research opportunities.

The ongoing debate around how universities can benefit from engaging in the SDGs, and actively contribute to this mandate, has occupied academics and researchers for the past few years. Accordingly Pharos university has taken the initiative to implement a project “Sustainability Transformations In Pharos University” for transforming Pharos university to be a sustainable university as part of compliance of Pharos university to implementation of the UN-SDGs and Egypt 2030.

2. About the Project

The main goal of the project is to mainstream sustainable development ideas and sustainability science into education and research in Pharos university, with tuning of academic functions, including “the changing of paradigm from industry-market driven research and learning process to the one that is backboned by sustainability. The specific objectives are:

- Developing new approaches and methodologies of teaching and education at all levels must be developed in the field of sustainability science.
- Exploring research and education practices at Pharos university and infuse the Sustainability science component
- Moving sustainability knowledge into actions across full range of scaled of disciplines, and
- create learning opportunities for students, and practitioners in the field of sustainability to meet the need required to comprehensively address sustainable development as a new way of running the university.

In literature, the Key characteristics of a sustainable university are:

- Transformative education rather than merely transmissive education to prepare students capable of addressing complex sustainability challenges.
- Rather than being a one-way process of learning, it must be more interactive and learner-centric with a strong emphasis on critical thinking ability (Sterling, 2005; Wals and Corcoran, 2006).
- A strong emphasis on effectively conducting inter and transdisciplinary research and science (see, e.g. Max Neef, 2005; Van Dam, 2006).
- Societal problem-solving orientation in education and research through an interaction through multiple interfaces to be pertinent to societal goals. As a result, students must be able to deal with the complexities of real problems and the uncertainties associated with the future.
- Networks that can tap into varied expertise around the campus to efficiently and meaningfully share resources.
- Leadership and vision that promotes needed change accompanied by proper assignment of responsibility and rewards, who are committed to a long-term transformation of the university and are willing to be responsive to society's changing needs (Lozano, 2006).
-

According to the above, the project “Sustainability Transformations In Pharos University ” focuses on awareness of sustainability and sustainability science , use of Education for Sustainable Development (ESD) as a tool for new teaching and learning delivery mechanisms, a diffusion of channels to market, and stakeholder expectations for increased impact and implementing sustainability in research areas of

combined perspectives e.g. innovation and social-ecological-technological systems interactions, patterns of transformation, and change agents for transformation. Education for sustainable development has to do with not only scientific knowledge but also is aligned with the development of personal and social aptitudes leading to responsible citizenship.

The project recognizes that higher education must do more than simply pay ‘lip service’ to sustainable development and should focus more on learning on issues of relevance facing society. As this is heavily interdisciplinary and related to values, there is a need to re-examine the goals of higher education with the sustainable development goals with emphasis on goal “quality education”.

For fulfilling the above goals, the project is planned to be implemented in 3 phases, which are:

Phase 1. Awareness phase:

This phase focuses on an awareness and campaigning process which is required to comprehensively address sustainable development through series of lectures and workshops (See [Appendix 1](#) for details) that allow some restructuring of the academic functions and learning process such that the education become culturally appropriate and locally relevant. It also includes designing educational contents and methods which the learner should acquire.

This phase will be implemented throughout the academic term of the university in the form of series of interactive lectures and workshops

Phase 2. Preparation phase.

The second phase is aimed at developing the scientific and educational base necessary to address key environment and sustainable development priorities, including ecosystems management; climate change adaptation; management of the world’s freshwater and marine resources; and responses to disasters and risks, sustainable energy sources, green cities, etc. In this phase formulation of focal groups from each faculty ([Appendix 2](#)) were identified to work on evaluating the sustainable development content of curricula in each faculty using different tools available, followed by mainstreaming sustainable development and sustainability science in the curricula.

The time allocated for this phase is 6 months.

Phase 3. Sustainability in practice.

This third phase focuses on the implementation of a change project for sustainable development in practice articulating a global vision in local terms. This phase addresses sustainable development goals and ways towards their achievements through small case projects in the different faculties of Pharos University. It will be implemented by students and young researchers to demonstrate Institutional development activities (e.g. policy development / green campus development / student initiatives etc.)

The time allocated for this phase is 12 months

This report puts forward points of view of each of the faculty members from the focal group that has participated in the project and addresses concerns in science education.

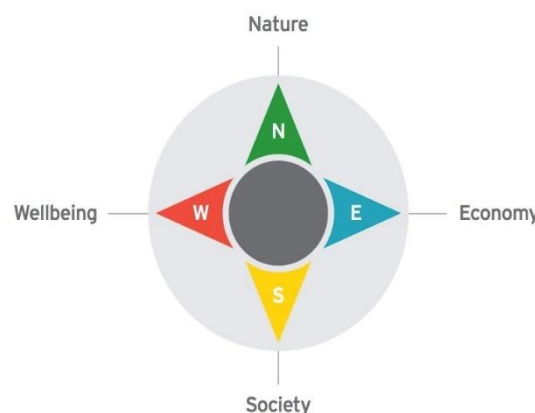
3. Sustainability Framework and Sustainable Development Goals (SDGS)

Sustainability Compass as a framework and as a tool provides a general overview, a methodological introduction, and stakeholder process guidance. It has been adopted for many uses including a classroom teaching and curriculum planning tool for educators. The Sustainability Compass, both as a symbol and as a category framework, is almost self-explanatory. A compass helps mapping the whole territory, and find our direction. This Compass takes the ordinary English-language directions -- North, East, South, West -- and renames them, keeping the same well-known first letters.

N is for Nature - All of our natural ecological systems and environmental concerns, from ecosystem health to resource consumption and waste.

E is for Economy - The systems by which we use nature, together with our own work and ideas, into goods, services, money and jobs.

S is for Society - The institutions and structures that organize our collective life as human beings, from government agencies to school clubs, as well as the cultural values underpinning them.



W is for Well-being - Individual health, happiness, and quality of life, which also includes the health and happiness of our families and others close to us, and our relationships to them.

Those four categories are not accidental. They correspond to categories created by prominent sustainability theorists, going back to the 1970s. The fact that the words line up so well with the four directions of a compass was a happy coincidence, discovered in 1997 by Alan AtKisson at an international meeting on indicators of sustainability, sponsored by the Dutch government. Since then, the Sustainability Compass has spread around the world.

These four category descriptions are general, but they can (and really must be) extended and elaborated with specific topics, depending on the specific use of the Compass. For example, the Sustainability Compass for business is quite different from the Compass for school use. But the four “Compass Points” still retain the same essential meanings.

Specifically and concretely, the Compass framework can be used to do the following:

- Explain sustainability to audiences of all kinds in clear, simple language
- Train and teach sustainability in a whole-system way
- Provide a unifying symbol for sustainability and sustainable development efforts
- Convene stakeholders and manage their involvement in sustainability initiatives, and ensure that you do not leave out any important perspectives
- Develop sustainability indicators and performance indices for an organization, company, city, or school
- Perform sustainability assessments and gap analyses for companies and other organizations

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

Here are the icons of SDSs

Sustainable Development Goals



These 17 Goals build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected – often the key to success on one will involve tackling issues more commonly associated with another.

academic institutions have a much broader responsibility and role to play to reach the wide-ranging SDGs.

3.1. How can universities contribute to the success of the SDGs?

The ultimate function of an academic institution is to provide youth with quality education. Therefore, universities play an essential role in teaching the younger generation about the wide spectrum of social, economic and environmental global challenges the world is currently facing. Moreover, as universities tend to hold the responsibility to advocate the importance of SDGs and play their part in fulfilling the SDGs in the following ways:

Research: Provide research knowledge, innovations and solutions towards achieving the SDGs. As universities tend to receive private and public research funds to directly and/or indirectly solve world issues, universities are responsible for providing the **in-depth academic and vocational training** needed to achieve the SDGs.

Institutional culture: Advocate for faculty members to help students set up networks, campaigns and projects to promote the importance of being an active member of society. Students need to take an active role in implementing their own research projects and recognizing opportunities to help attain the SDGs.

External leadership: Universities are responsible for raising awareness about the SDGs, whether through public lectures, community events or forums. Universities need to collaborate with other institutions and work with policymakers and leaders to identify problems and potential solutions to create a more sustainable, inclusive and innovative world.

Education for Sustainable Development (EDS) is a two-way street. It is evident that the UN's SDGs are ambitious and difficult to attain without an education sector that empowers future leaders to make responsible decisions that positively contribute to economic viability, environmental integrity and societal growth.

4. Education for Sustainable Development (ESD).

Embarking on the path of sustainable development will require a profound transformation of how we think and act. To create a more sustainable world and to engage with sustainability-related issues as described in the SDGs, individuals must become sustainability change-makers. They require the knowledge, skills, values and attitudes that empower them to contribute to sustainable development.

Education, therefore, is crucial for the achievement of sustainable development. However, not all kinds of education support sustainable development. Education that promotes economic growth alone may well also lead to an increase in unsustainable consumption patterns. The now well-established approach of Education for Sustainable Development (ESD) empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society for present and future generations.

ESD aims at developing competencies that empower individuals to reflect on their own actions, taking into account their current and future social, cultural, economic and environmental impacts, from a local and a global perspective. Individuals should also be empowered to act in complex situations in a sustainable manner, which may require them to strike out in new directions; and to participate in socio-political processes, moving their societies towards sustainable development. ESD has to be understood as an integral part of quality education, inherent in the concept of lifelong learning. Thus, ESD does not only integrate contents such as climate change, poverty and sustainable consumption into the curriculum; it also creates interactive, learner-centered teaching and learning settings. What ESD requires is a shift from teaching to learning. It asks for an action-oriented, transformative pedagogy, which supports self-directed learning, participation and collaboration, problem-orientation, inter- and transdisciplinary and the linking of formal and informal learning. Only such pedagogical approaches make possible the development of the key competencies needed for promoting sustainable development.

Education for Sustainable Development means including key sustainable development issues into teaching and learning; for example, climate change, disaster risk reduction, biodiversity, poverty reduction, and sustainable consumption. It also requires participatory teaching and learning methods that motivate and empower learners to change their behavior and take action for sustainable development. Education for Sustainable Development consequently promotes competencies like critical thinking, imagining future scenarios and making decisions in a collaborative way. Education for Sustainable Development requires far-reaching changes in the way education is often practiced today. UNESCO is the lead agency for the UN Decade of Education for Sustainable Development (2005-2014) that was extended for another decade. As we get closer to the 2030 SDG agenda, it has become clear that achieving the UN SDGs is far from possible without the education sector's significant involvement in the cause. Education for Sustainable Development (EDS) has been recognized as an integral contributor to achieving several SDGs.

5. Mapping and System Thinking

One of the most useful and easily adopted tools to use in teaching and the study of complex sustainable development issues are the concepts system thinking and curriculum mapping concepts. These concepts are especially handy in higher education when used to clarify the shared understanding and multidisciplinary and transdisciplinary issues in education and research, and joint cooperation of members of a working team or study circle. In most cases, concept mapping can help participants to understand and clarify not only their own knowledge building but also the constructions of knowledge by other members of the study group. With this digital tool for concept mapping one can, it is possible to share information and understanding with others and find put subtle connections among courses and applications. In the current project, the concept of curriculum mapping has been used a specialized tool called Unit-based Sustainability Assessment Tool (USAT). USAT This sustainability assessment tool was developed for use in the Swedish/Africa International Training Programme (ITP) on 'Education for Sustainable Development in Higher Education', and complements the UNEP Mainstreaming Environment and Sustainability into African Universities (MESA) 'Education for Sustainable Development Innovations Programmes for Universities in Africa' materials (available on www.unep.org/training/mesa/toolkit.asp). It is designed to assess sustainability at universities. The tool focuses on the different functional units in a university (e.g. departments, research units, management units etc.), and how they are integrating sustainability concerns into their core functions of teaching, research and community engagement and university management operations. Using a unit-based assessment tool allows for 'building the picture' of the whole, as well as concentrating on specific units as required (e.g. concentrating on one department etc.). This framework allows for the integration of sustainability thinking across the different units of the university and creates possibilities for sustainability issues to be managed within functional units, as well as through a broader systemic framework. (details in Appendix 3).

Part 2. Project Results

System thinking in terms of the 4 main components of sustainable development; economy, nature, society and wellbeing were used to illustrate the sustainability components in the curricula as a show case of each faculty. However, the detailed analysis and quantification of the current situation is implemented using the USAT.

The results of such analysis in each faculty are represented below for each faculty, arranged by alphabetical order. The general trend of presenting the results in all faculties takes the following sequence:

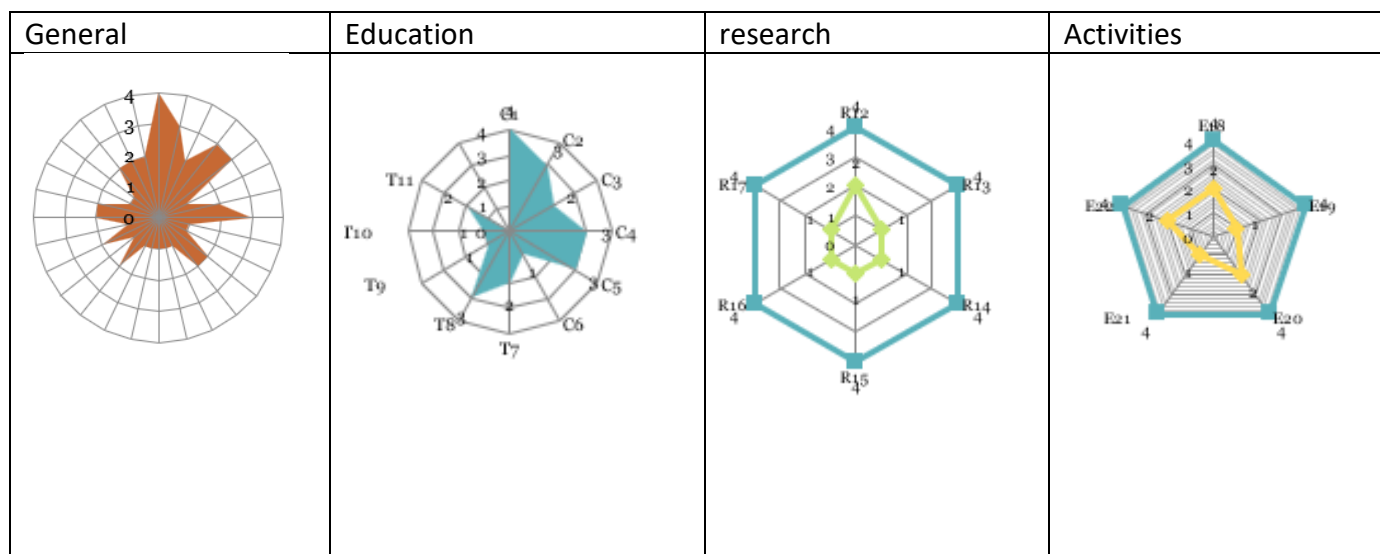
1. Assessing the Status Quo
 - a) Review of curricula for selection of relevant courses for evaluating the components of sustainable development
 - b) Evaluation of components of sustainable development in courses using USAT tool
 - c) Analysis of the results in terms of Education – Research – Activities and Practices.
 - d) Calculating percentage of current situation as indicators
2. Proposed plan of action using sustainable development goals as indicators for improvement of the current situation.
3. Expected results foreseen.
 - a) Expected results foreseen in 2020-2022 Education – Research – Activities and Practices
 - b) An Overview of the results foreseen
 - c) Calculating percentage of the expected result
4. Examples of Practices
5. Comparisons and final recommendations

1. Faculty of Allied Medicine

Represented by Drs.:

Amany Salama,
Ehab Barakat,
Hadeel Saeed Tawfik, and
Rania Assem

The current status of the curriculum of the Nutrition department :



The results showed us that:

- the department offer courses that engage sustainability concerns more than we expected
- we need to be better at reinforcing expertise of staff members in the area of sustainability
- there are opportunities to expand our teaching and research in the area of sustainability

Some Examples

Department of Nutrition Research

11 SUSTAINABLE CITIES AND COMMUNITIES


12 RESPONSIBLE CONSUMPTION



3 GOOD HEALTH


Research

- The department of nutrition endorsed two graduation research projects this year about:
 - **Fruit Derived Waste as a Sustainable Alternative Source of Nutraceutical Compounds:**
Date seed powder & Pomegranate peel powder Nanoparticles and Steeping
 - **Nutraceutical effect of macro & micro algae on obesity and its co-morbidities.**

PHAROS UNIVERSITY IN ALEXANDRIA
FACULTY OF ALLIED MEDICAL SCIENCES
NUTRITION DEPARTMENT

FRUIT DERIVED WASTE AS A SUSTAINABLE
ALTERNATIVE SOURCE OF NUTRACEUTICAL
COMPOUNDS: DATE SEED POWDER (DSP) &
POMEGRANATE PEEL POWDER (PPP)
NANOPARTICLES AND STEEPING



SUPERVISED BY:
DOCTOR JAMANYI SALAMA
DOCTOR MAGALAA IMAM

UNDER THE INSTRUCTIONS OF
THE HEAD OF THE DEPARTMENT
PROF. DR. ESSAM GHONIM

ALEXANDRIA
PHAROS UNIVERSITY

NUTRACEUTICAL EFFECT OF
SOME TYPES OF MACRO
AND MICRO ALGAE ON
OBESITY AND ITS
CO-MORBIDITIES

Graduation Project
2019

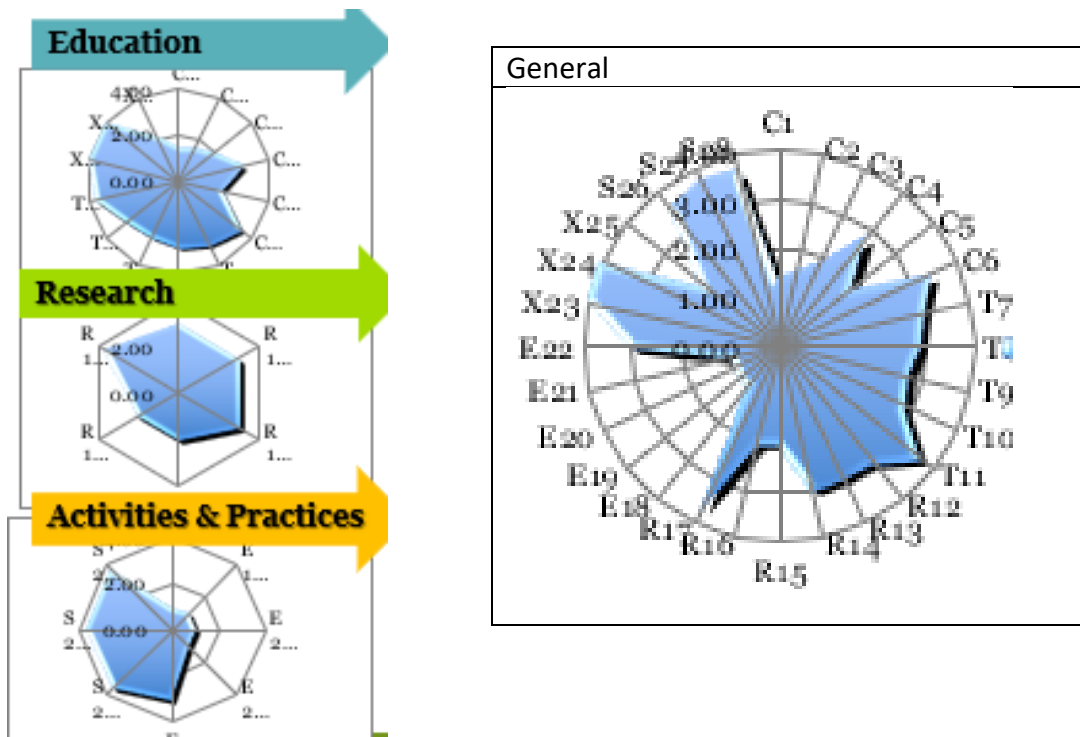
SUPERVISED BY
PROF. ASSOCIA. HANAN ELGAMAL
DR. SALLY SALAH

2. Faculty of Arts and Design

















The curricula of the Décor department as a model was reviewed for selecting the relevant courses for evaluating the components of sustainable development

before

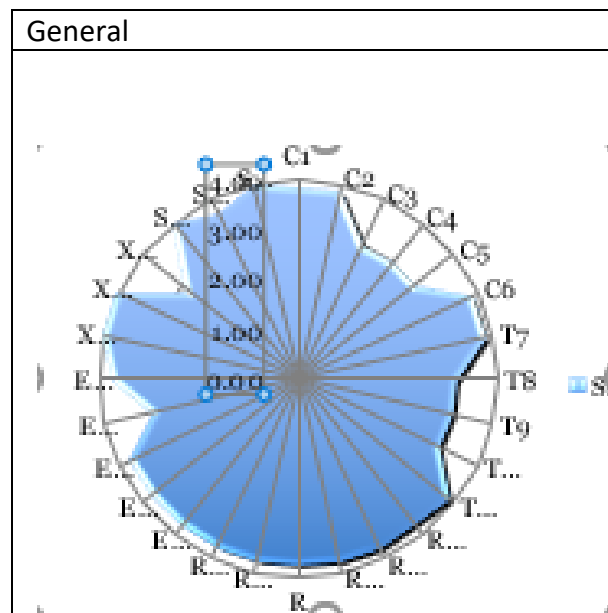
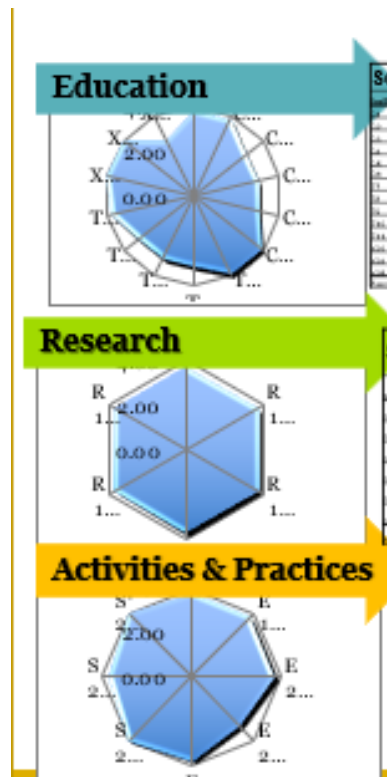
PRESENTED BY



Courses related to the foundations and the principles of Interior design in different spaces also the interior design for theatre and cinema	Course Code	Sustainability Topic to be addressed in curricula	Sustainability Compass				
			N	S	E	W	
INTERIOR DESIGN- 1	D221	1. Footprint 2. Hazard of chemicals 3. Reduce pollution (Using less of papers & colours)	✓	✓	✓	✓	
INTERIOR DESIGN- 2	D222	1. Reduce pollution (Using less of papers & colours) 2-Natural alternatives for cost reduction	✓	✓	✓	✓	
INTERIOR DESIGN- 3	D321	1. Reduce pollution (Using less of papers & colours) . 1. Using Recycling Materials in interior Design	✓	✓	✓	✓	
INTERIOR DESIGN- 4	D322	1. Design Multi- Functional Furniture. 2. Furniture Design From Nature Materials	✓	✓	✓	✓	

S.	Courses related to the foundations and the principles of Interior design in different spaces also the interior design for theatre and cinema	Course Code	Sustainability Topic to be addressed in curricula	Sustainability Compass				
				N	S	E	W	
5	Interior Architecture Design -1	ID421	1. Activation of sustainable design in Interior Architecture. 2. Using clean energy 3. Furniture design from nature	✓	✓	✓	✓	   
6	Interior Architecture Design -2	ID422	1. Activation of sustainable design in Interior Architecture. 2-Natural alternatives for cost reduction	✓	✓	✓	✓	   
7	Interior Architecture Design -3	ID521	1. Using technology in design 2. Activation of sustainable design in Interior Architecture. 3. Multi-functional Furniture 4. Using Recycling materials in interior design.	✓	✓	✓	✓	       

Foreseen results for 2020-2022




Examples:

**E
X
A
M
P
L
E
S**

Education



Awareness lecture about update courses by using sustainable development
18/3/2019

Presented
By Prof.Dr. Hanan sobhy
&
Dr. Shaimaa khodeer



Research



Research project about recycle the remains and debris of the marble and granite originate as a waste of marble workshops
Presented By Prof Eman Ramzy



Activities & Practices

A questionnaire Workshop about update courses by using sustainable development
18-20/3/2019

Presented
By prof.Dr. Hanan sobhy & dr. Shaimaa khodeer




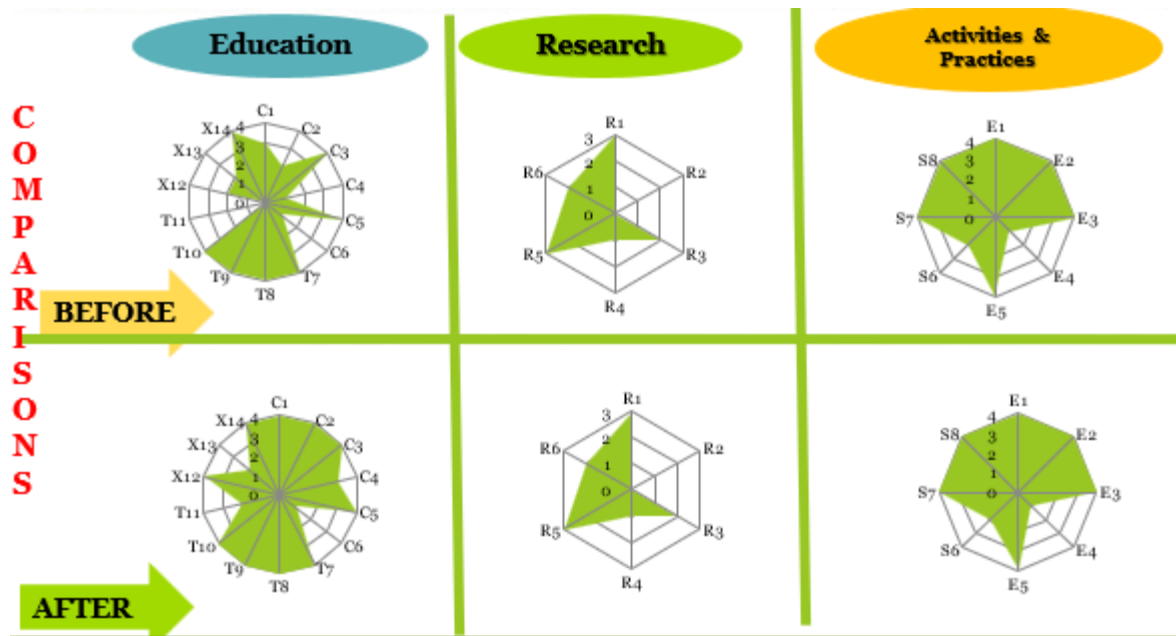
3. Faculty of Dentistry

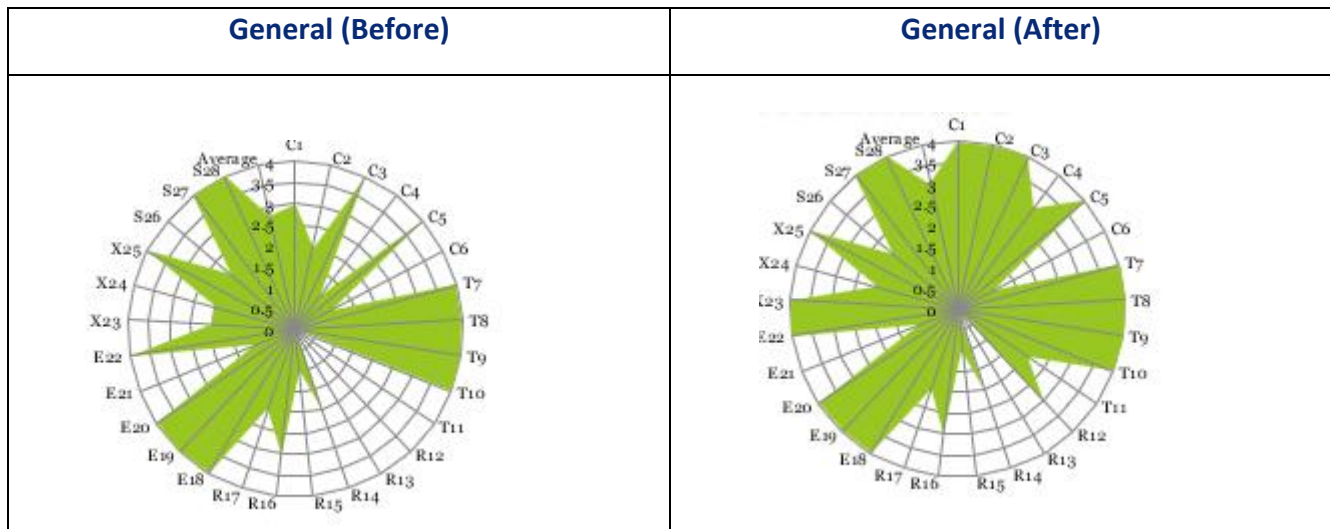
Represented by : Dr. Sherif Darwish
Dr. Nancy Ramez
Dr. Walid Lotfy

Sustainability topics addressed/to be addressed in the curricula:

S.	Sustainability Topic to be addressed in curricula	Course name (current curricula	Course Code	Sustainability Compass				topics Addressed	To be addressed	THE GLOBAL GOALS
				N	S	E	W			
1	Climate change	Botany	BOT122	✓					✓	13 CLIMATE ACTION
2	Pollution	Botany	BOT122	✓		✓	✓		✓	
3	Footprint	Botany	BOT122	✓					✓	
4	Limitation of resources and poverty	Botany	BOT122	✓		✓			✓	11 SUSTAINABLE DEVELOPMENT AND 12 RESPONSIBLE CONSUMPTION
5	Natural alternatives for cost reduction (Graduation Researches)	Endodontics 5 Restorative Dentistry 6 Fixed Prosthodontics 6 Removable Prosthodontics 6 Periodontology 4	RDE 552 RD 562 FPR 562 RPR 562 PI 542	✓		✓	✓	✓		11 SUSTAINABLE DEVELOPMENT AND 12 RESPONSIBLE CONSUMPTION
6	Poverty challenges (CCC)	Endodontics 5 Restorative Dentistry 6 Fixed Prosthodontics 6 Removable Prosthodontics 6 Periodontology 4	RDE 552 RD 562 FPR 562 RPR 562 PI 542		✓	✓	✓	✓		1 NO POVERTY 3 GOOD HEALTH
7	Poverty challenges (Medical convoys)	Community Dentistry 1 Community Dentistry 2	PCDC 531 PCDC 542		✓	✓	✓	✓		1 NO POVERTY 3 GOOD HEALTH
S.	Topic	Course name	Course Code	Sustainability Compass				Addressed	To be addressed	THE GLOBAL GOALS
				N	S	E	W			
8	Technology	Computer Skills & Programming Concepts Computer Skills & Programming Concepts	UEC 01 UEC 02		✓	✓	✓	✓		4 QUALITY EDUCATION
9	Preventive dentistry	Community Dentistry 1 Community Dentistry 2	PCDC 531 PCDC 542		✓	✓	✓	✓		3 GOOD HEALTH
10	Reduction of infection rate	Dental Clinic Management & Infection Control	CD 312		✓	✓	✓	✓		3 GOOD HEALTH
11	Globalization	Principles Of Law, Human Rights & Ethics	GEN 211		✓	✓			✓	16 PEACE AND JUSTICE
12	Gender equality	Principles Of Law, Human Rights & Ethics	GEN 211		✓	✓	✓		✓	10 REDUCED INEQUALITIES

S.	Topic	Course name	Course Code	Sustainability Compass				Addressed	To be addressed	
				N	S	E	W			
13	Culture equality	Principles Of Law, Human Rights & Ethics	GEN 211		✓	✓	✓		✓	
14	Democracy for a better society	Principles Of Law, Human Rights & Ethics	GEN 211		✓	✓	✓		✓	
15	Hazard of chemicals	Dental Biomaterial 1 Dental Biomaterial 2	RDM 211 RDM 222	✓		✓	✓	✓		
16	Stewardship of drugs	Pharmacology 2 Local Anaesthesia & Pain Control	PHM 322 OS 411			✓	✓		✓	
17	Terminology of sustainability	English 1 English 2 English 3	UGE 01 UGE 02 UGE 03	✓	✓	✓	✓		✓	
18	Terminology of sustainability	Arabic Language Skills	UGA 03	✓	✓	✓	✓		✓	





Examples

	Education	Research	Activities & Practices
E			
X			
A			
M			
P			
L			
E			
S			
	<p>Awareness presentation about the Sustainability Transformation s in Pharos University to staff and assistant staff members</p> <p>Dr. Sherif Darwish Dr. Nancy Ramez Dr. Walid Lotfy</p> <p>04/03/2019</p>	<p>Graduation Research about</p> <p>Dental unit waterlines disinfection using aloe vera extract compared to sodium hypochlorite</p> <p>Supervised by: Prof. Hamida Abu Bakr and Dr. Walid Lotfy</p> <p>02/01/2019</p>	<p>Proposals of course coordinators regarding sustainability integration in courses</p> <p>Dr. Sherif Darwish Dr. Nancy Ramez Dr. Walid Lotfy</p> <p>03/04/2019</p>

4. Faculty of Engineering

Represented by

Dr. Alaa Khalil, Basic Sciences Dep.

Dr. wegdan Agdy, Construction Dep.

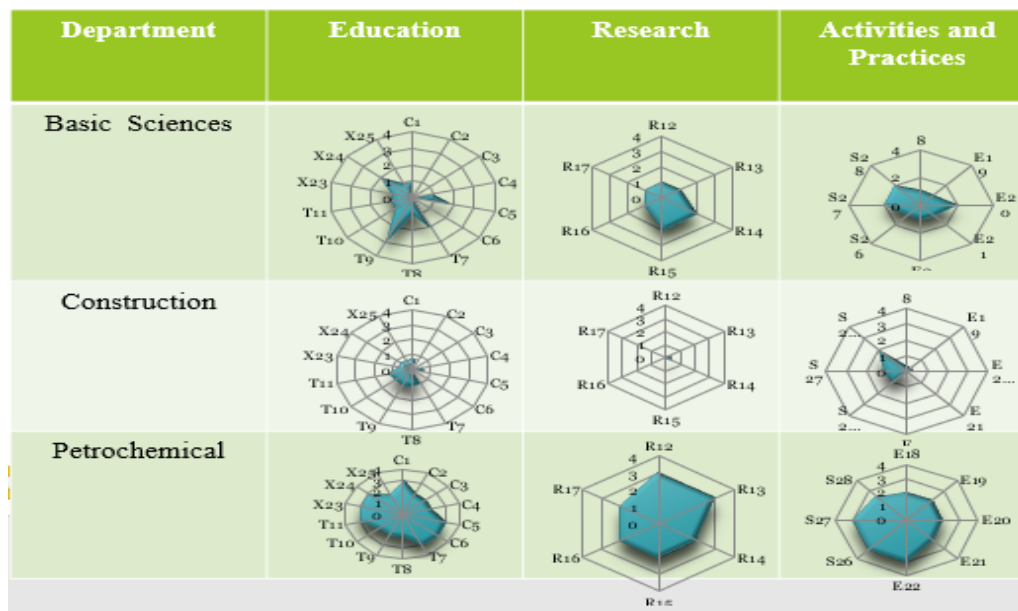
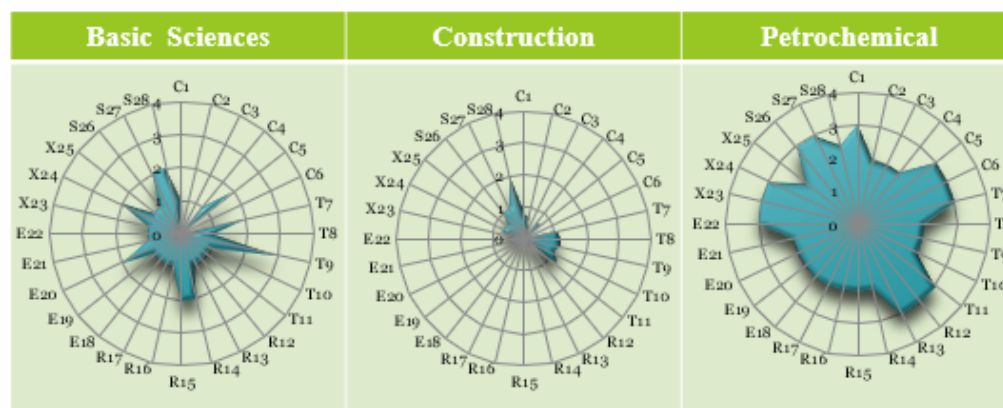
Assoc. Prof. Noha Said &

Assoc. Prof. Rania Farouq , Petrochemical Dep.

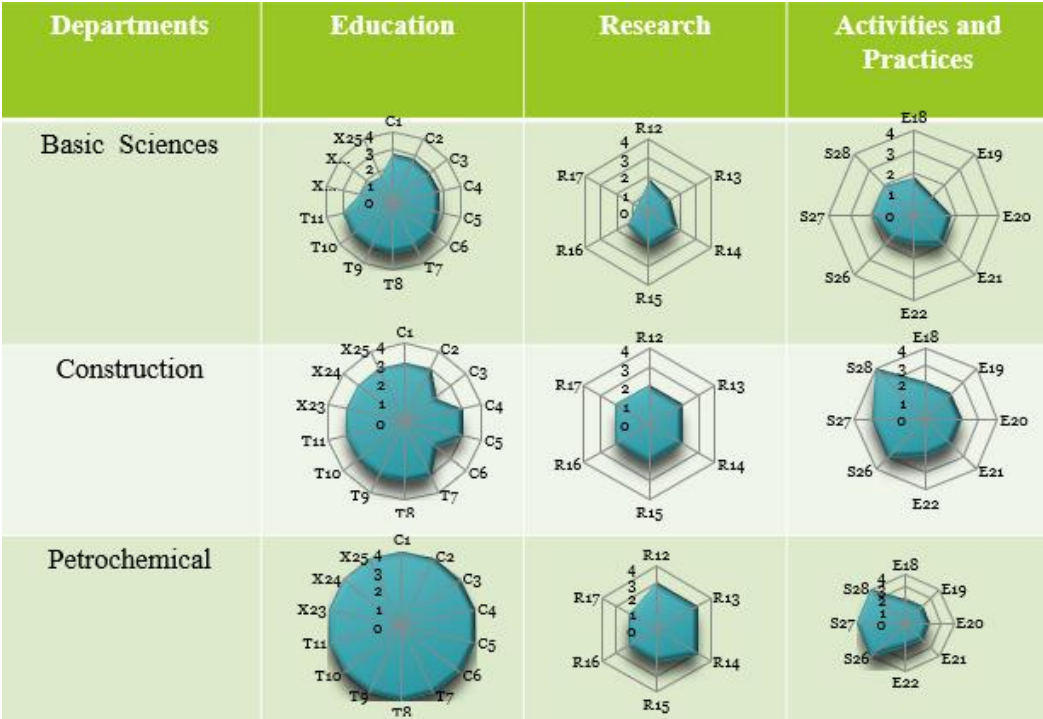
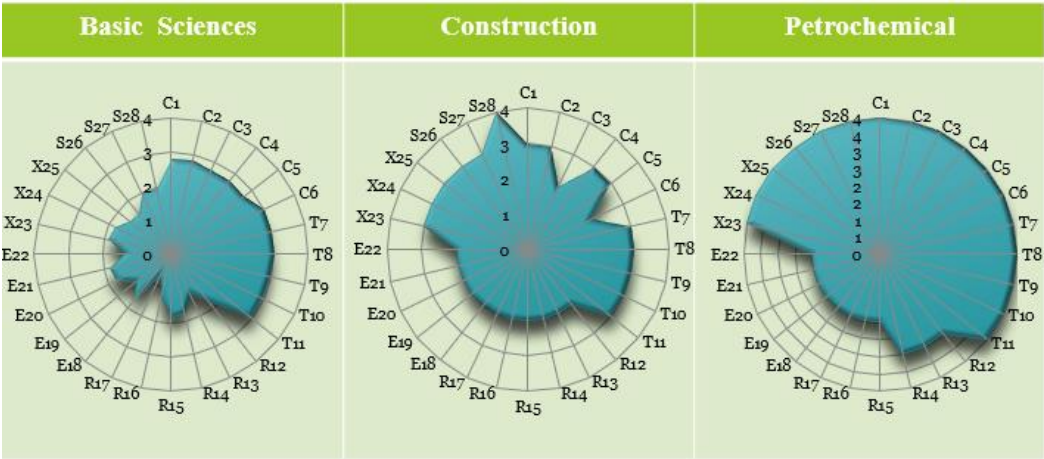
The curricula of the basic sciences, construction and petrochemical engineering programs were reviewed for selection of relevant courses for evaluating the components of sustainable development.

The general evaluation of components of sustainable development in some courses using USAT tool are as follows:

Details



A Proposed plan of action using sustainable development goals as indicators for improvement of the current situation. The results anticipated are:



Examples of Activities and Practices (year 2018/2019)

Education

Awareness about sustainability during regular seminars in the department (for staff).

Awareness about sustainability during the lectures (for students).

Research

- Opened research areas for water treatment and bio-electromagnetism. (basic sciences dep.)
- Opened research areas for effective usage of materials in concrete manufacturing. (construction dep.)

Activities

- Workshop about sustainability in cooperation with KTH (for staff).
 - Workshop about System Thinking and Transdisciplinary to implement sustainability in curriculums (for staff).
 - Sustainability competition "GO GREEN"
 - Competition with Birla Carbon company "Towards a sustainable tomorrow"
-

Infusing sustainability in the curricula- Petrochemical Department

Course code	Course name	Original description	Modifications according to sustainability workshop	Modification according to KTH Recommendations
EP 210	Organic chemistry 1	This course introduces the students to the principle of organic chemistry including structure, physical and chemical properties of several important functional classes, reaction mechanics and stereo chemical consideration. It also covers relationships between structures, properties and chemical activities. Hydrocarbons, aliphatic and aromatics, structural isomerism, ,compounds containing oxygen, alcohol's, aldehyde, ketone and carboxylic acids, Sulphur compounds nitrogen compounds amines, diazonium compounds petroleum refining and applications, classes of organic compounds encountered in petroleum ,gas and petrochemicals.	-----	Topics to be added: Chemical structure of polymers and its principles, chain formation.
EP 214	Inorganic chemistry	Atomic structure of elements, graduation of elements properties (Modern periodic table), nature of bonds, chemical calculations, hydrogen and its compounds, alkali metals,	-----	-----

		<p>Group I(A), Group II(A), Group III(A), Group IV(A), Group V(A), Group VII(A), Transition Metals, catalytic properties, & water treatment methods.</p> <p>Introduction to analytical chemistry, quantitative analysis using gravimetric analysis, titration methods, precipitation titration using silver nitrate, acid/base titration (principles and applications), oxidation/reduction titration (argentimetry)& pH measurement</p>		
EP 217	Material science	<p>This course introduces the students to Classification of engineering materials, atomic and molecular structure, bonding and coordination and Properties relationship in materials (metals, ceramic glasses and polymers). It also covers Corrosion resistant materials, composites and their applications, testing of materials and selection factors for various applications. The course focuses on polymer properties and modification for special applications. Crystallography, Solidification of metals and alloys, Phase diagrams (Binary), Iron – Carbon diagram, Heat treatment – Ferrous alloys. The lab concentrates on sample preparation and testing effect of service conditions on the properties of materials, properties of alloys and composites.</p>	<p><u>Topics to be added:</u></p> <p>Suitable materials and alloys applications for sustainability.</p>	<p><u>Topics to be added:</u></p> <p>Physics of polymers, polymer crystal structure , crystalline and amorphous polymers, polymer tensile test, Mechanical properties of polymers (yield fracture, crazing, creep ,etc...).</p>

EP213	Organic chemistry II	This course introduces the students to a continuation of organic chemistry reaction mechanism and synthesis pathway sulphonations, nitration, oxidations, and polymerization. It also covers the specific classes of compounds derivatives.	<u>Topics added:</u> Applying the principles of green chemistry to polymer production.	<u>Topics to be added:</u> Polymerization reactions, molecular weight calculations, radical polymerization of polystyrene, PPO, thermoset polymerization, mechanism, crystallization of polymers.
EP 314	Instrumental Analysis	Measurement and measurement errors , Accuracy and precision , Types of Errors , Statistical analysis , Systems of measurement Units , Intelligent and dumb instrument This course introduces the students to spectroscopic and spectrophotometer analysis, ultraviolet spectrophotometer, molecular fluorescent spectrophotometer, Introduction to chromatographic analysis, Gas and liquid chromatography, sample preparation, Experimental work, and introduction to techniques and instruments used in modern chemical research.	----- -----	<u>Topics to be added:</u> Ion beam-based methods (SIMS, RBS) FTIR- Atomic Absorption Photoelectron spectroscopies (XPS, UPS, Auger, etc.) Electrical characterization universal testing machine, thermal testing machine ,Rheometers,...etc
EP 315	Physical Chemistry	This course covers reaction rates, kinetic theory of interfacial gas chemistry, adsorption of gases and liquids. Colloidal Systems, emulsion polymers and fine liquid droplets are	----- ----	----- -----

		covered. Chemical equilibria and effect of temperate and pressure on equilibrium constant		
EP 200	Chemical engineering thermodynamics 1	This course introduces the students to Thermodynamics concepts and definitions, first law of Thermodynamics (Closed and open systems), heat effects, equation of state. It also covers Second law and Carnot Cycle, Rankin cycle and modification, entropy and third law of thermodynamics.	<u>Topics to be added:</u> Heat effects and its impact on sustainability.	<u>Topics to be added:</u> Applications of first and second laws of thermodynamics in chemical engineering.
EP 201	Introduction to petrochemical industries	This course introduces the students to Raw materials for petrochemical industries, Preparation and manufacture of gas and liquid hydrocarbons, Separation methods of paraffin's aromatics and xylenes. It also covers Preparation of methanol, alcohols and ammonia, production of detergents, plastics and synthetic rubber.	<u>Topics to be added:</u> Alternative sources of feed's stocks.	<u>Topics to be added:</u> -Raw materials for petrochemicals (NG, middle distillates). -Olefin's production (FCC, Cracking , dehydrogenation technologies.....).
EP 327	Chemical Process Principles	Fundamentals of material balance calculations, Batch and continuous, steady flow and unsteady process, reactive and non reactive systems for single unit and multi unit process, process with recycle and by-pass with or without purge material balance for	<u>Topics to be added:</u> Comparison Case studies using Recycle, and by-pass process, with and without using them	<u>-----</u>

		<p>Combustion reactions single phase systems, multiphase systems degrees of freedom analysis. Energy balance on closed and open system the steady flow energy equation tables of thermodynamic data. Energy balance on non reactive process –state properties and hypothetical process paths employed for their estimations , Energy balance for mixing and dissolution process , Energy balance on reactive process , heat of reaction measurements and calculation of heat of reaction , Hess`s law, formation reaction and heat of formation , heat of combustion . Energy balance for combustion reaction, adiabatic reaction temperature.</p>		
EP 389	Introduction to environmental engineering	<p>Clean environmental standards. Rules and regulations applied to soil, water and air. Sources of environmental pollution, estimation of pollutants in the environment and presentation of suitable schemes for abatement and control. The course unit focuses on the application of engineering principles for producing clean environment.</p>	<p><u>Topics to be added:</u></p> <p>Awareness of Community on Sustainability applications, Reuse of waste water and its application</p>	<p><u>Topics to be added:</u></p> <p>Sources of environmental pollution in petrochemical industry, incineration and vent gas treatment, Sustainability applications in petrochemical industries.</p>

EP 220	Chemical engineering thermodynamics II	<p>Application of The first and second laws of thermodynamics in Chemical Engineering, the heat effects, vapour liquid equilibrium, Thermodynamics of mixtures chemical reaction equilibrium.</p> <p>Phase rule- solid-liquid equilibrium- solid-gas equilibrium –gas-liquid equilibrium. Vapor –liquid equilibrium: Ideal mixtures. Two compound systems (binary). Three compound systems (ternary) use of modern programs to predict relationships and diagrams in binary and ternary systems.</p>	<p>Topics to be added:</p> <p>Application of polymer thermodynamics.</p> <p>Introduce Exergy and its applications.</p>	<p>Topics to be added:</p> <p>Phase diagrams of polymer solutions, polymer thermodynamics, entropy elasticity, enthalpy elasticity, viscoelasticity.</p>
EP 231	heat transfer in chemical process	<p>Heat conduction, convection and radiation (for steady and unsteady states) and its application in chemical operations, extended surfaces, thermal boundary layer and turbulence. Heat transfer inside pipes and outside geometries, heat transfer in packed beds and chemical reactors, boiling, condensation, Heat exchangers</p>	<p>Topics to be added:</p> <p>Waste heat boilers, Furnaces, Reuse of heat of flue gases, Burner selection (Low NOx burners), recuperators</p>	<p>Topics to be added:</p> <p>fixed heaters and boilers.</p>

EP 340	Safety for petrochemical industries	proper handling of toxic and dangerous materials, basics of inflammation, fires, and explosions, ways of protection from fires and explosions as well as relevant legislation concerning occupational safety .Hazards peculiar to industries like fertilizer, heavy chemicals petroleum, pulp and paper, tanneries, dyes, paints, pesticides, glass and ceramics, dairy and sugar industries. Guidelines for safeguarding personnel and safeguarding against water	Topics to be added: Safety systems , Flaring systems, Case studies	Not found in KTH report
EP 392	Pollution control in petrochemical industries (Elective course)	This course introduces the students to introduction, types of pollutants, parameters of water quality (physical, and chemical parameters), Refinery liquid based treatment method, oxidation pond treatment, disposal of sludge, treatment of sludge, treatment of liquid effluents from petrochemical industries, Air pollution control devices, particulate and gaseous states, Removal of ammonia from gases.	<u>Topics to be added:</u> Incineration	-----
EP 391	Manufacture of synthetic Rubber	Classifications of synthetic rubber, general characteristic of rubber, raw materials for rubber production,	<u>Topics to be added:</u> Introduce Natural Rubber	<u>Topics to be added:</u>

		butadiene rubber, styrene butadiene rubber, nitrile rubber.	Recycling of Rubber	All rubber like materials, EPDM, rubber elasticity, dynamic behavior, damping , thermo plastic elastomers TPU,TPE.
EP 313	Mass Transfer (I)	Molecular mass transfer. Estimation and measurement of diffusion coefficient, analogies among mass, heat and momentum transfer in turbulent flow. Interphase mass transfer, continuous two-phase transport, absorption drying	<u>Topics to be added:</u> Energy saving in dying process (try to reuse heat from other process in heating air, instead of heating) Calculation of the optimum air temperature and humidity in order to reach economic design (Decrease number of drying stages)	<u>Topics to be added:</u> three phase transport.

EP 324	Gas treatment and liquefaction	<p>Characterization of natural gas systems. Qualitative phase behavior of natural gas systems. Separators design and selection. Mercury removal, water-hydrocarbon system-hydrate formation, inhibition dehydration, sweetening equipment sizing, selection and design. Fundamental of gas liquefaction and liquefaction cycles : houle –Thompson, turbine expansions and external refrigeration . hydrocarbon recovery units, materials equipment performance and selection, natural gas liquefaction plants, LNG storage and degasification plants</p>	<p><u>Topics to be added:</u> Recovery of valuable products in Gas treatment process, and reuse it in industry.</p> <p>Using natural sorbents in gas treatment process</p> <p>alternative dry treatment technologies</p>	<p>-----</p>
EP 335	Polymer (1)	<p>Chemistry of polymerization and the polymer manufacturing process. It begins with basic concepts about polymers and polymerization and covers each major type of polymerization with relevant kinetics. The qualitative effect of reactor design on polymer manufacture is discussed as well as actual polymer.</p> <p>Basic structure-property relationship and covers many of the modern techniques used in the characterization and testing of polymers in order to determine the structural, thermal, mechanical, and chemical properties of polymers. Topics covered include</p>	<p>----- -----</p>	<p><u>Topics to be added:</u> Compounding and composites.</p> <p>lab should include:</p> <p>melt flow index,</p> <p>SEC/GPC for molecular weight calculations ,</p> <p>capillary rheometer [internsic viscosity],</p> <p>tensile tester</p>

		polymer structure, glass-rubber transition, mechanical properties, viscoelasticity, solution properties and methods of polymer analysis.		
EP 333	Chemical reaction & industrial catalysis	This course introduces the students to the rate of reaction, interpretation of kinetic data, batch systems, flow systems reaction in series. The reaction rate constant, the reaction order, elementary & non-elementary reaction and molecularity. Reversible reactions, reactor sizing, batch systems, volume change with reactions. Isothermal reactor design, continuous stirred tank reactors (CSTR) and tubular reactors. Pressure drop in reactors. Unsteady state operation of reactors. Principles of the industrial utilization of heterogeneous catalysis, topics include absorption phenomena, methodology in catalyst preparation, characterization and evaluation of catalysts, diffusion and reaction in porous catalysts, and a survey of major industrial processes. Flow sheeting applications of special Computer programming to design equipment and chemical reactors.	<u>Topics to added:</u> Regeneration and reused of catalysts.	<u>Topics to be added:</u> Ziglar Nata,Cr , Metallocene Catalyst , initiators and its applications in petrochemical industries .
EP 326	Gas storage and transportation	This course introduces the students to Design theory and methods of production and measurement of natural gas, Transportation,	<u>Topics to be added:</u> Properties of reservoir liquid	Not found in KTH report

	(Elective course)	transmission, storage and distribution pipeline network.	, coefficient of isothermal compression ability of liquid hydrocarbons , pseudo critical properties of HC liquid mixtures(high& low shrinkage crude, wet & dry gases and retrograde compounds).	
EP 317	Unit operations	This course introduces the students to Distillation, liquid-liquid extraction and leaching, humidification and crystallization mechanical separation processes (filtration, sedimentation, centrifugation, gas cleaning. Simulate the unit processes by using simulation tools	<u>Topics to be added:</u> Advanced types of trays & towers. In liquid-liquid extraction :Recovery of solvents	<u>Topics added:</u> Dewatering and electrolysis
EP 318	Corrosion engineering	This course introduces the students to Importance of corrosion , electro chemical series of metals , Galvanic series of metals , Electrode potential – current density curves Types of Corrosion and mechanisms, corrosion monitoring and detection, metallurgical aspects of corrosion and material selection, and corrosion prevention and control	<u>Topics to be added:</u> Green corrosion , non-metallic materials degradation	<u>Topics to be added:</u> polymer degradation and stability.

EP 320	Automatic process control	This course introduces the students to Theoretical bases of automatic control analysis and design of chemical Process control systems, control aspects of chemical Process, Liner open- loop systems liner closed –loop systems frequency response process application , and computer in Process control.	-----	-----
EP 328	Water treatment (Elective course)	This course introduces the students to Water chemical analysis, water treatment for different uses, Equipment design calculations. Water quality overview, water analysis and assay for special purposes, unit operations for water treatment and calculations	<u>Topics to be added</u> Case study: recovery of valuable salts from industrial waste water. Management of waste water to approach ZLD.	-----
EP 329	Industrial fibers technology	This course introduces the students to Classification of manmade fibers general view. Of the technological process for the production of manmade fibers regenerated fibers (viscous) synthetic fibers, polyamide, polyester, acrylic and polypropylene fibers.	<u>Topics to be added:</u> The application of synthetic fibers as a partial replacement of natural fibers.	<u>Topics to be added:</u> bio fibers,(PA 6,10),interphase polymers ,flex fibers, wood fibers.
EP 336	polymer science and	This course introduces the students to an Introduction to polymer processing, polymer rheology, major types of	<u>Topics to be added:</u>	<u>Topics to be added:</u>

	engineering (2)	polymer processing focusing on extrusion, injection, molding, fiber spinning, film blowing, polymer formulation and additives.	<p>Recycling of polymers: (Plastic waste to energy)</p> <p>Sustainable polymers , polymers from renewable resources</p>	biodegradation mechanism, Material selection, reverse engineering, comparison of polymer properties. Adding IR spectroscopy for chemical groups and DSC (crystallinity ,melting point and glass transition temperature),using software (C-mold or mold flow).
EP 362	Petroleum refining & evaluation of its products	This course introduces the students to Theories of petroleum origin, physical properties with the study of its curves, preparation of crude for refining operations& Chemical treatment of petroleum products. Processing of petroleum distillation, atmospheric and vacuumed distillation operation and its calculations, hydrogenation, isomerisation, thermal and catalytic refining, thermal and catalytic cracking, Dewaxing methods. Methods of refining with: alkalis, acids, solvent extraction& the standard specification for petroleum products.	<p><u>Topics to be added:</u></p> <p>Replace petroleum fractions with renewable one (biodiesel)</p>	<p><u>Topics to be added:</u></p> <p>Refinery catalytic conversion process , hydrotreating, ,dehydrogenation, Aromatization, dehydrocyclization, alkylation, refinery configurations, integrated LC fining with hydro processing heavy oil residue desulfurization processes, simplified refinery with delayed cockers as primary upgrader, LC fining and delayed cocking ,optimized residue conversion.</p>
EP 385	Optimizati on of chemical process	This course introduces the students to Theory and methods of optimization, Linear, nonlinear, and dynamic programming, Applications on chemical	----- -----	-----

		reactor design, Heat transfer and energy conservation.		
EP 361	Fertilizers Industries	Natural gas as a source for feed stock for fertilizers industries. Gas – shift reaction, ammonia synthesis, urea production, nitric acid and nitrate fertilizers, Formulation of fertilizers for specific needs.	<u>Topics to be added:</u> Organic-Fertilizers, Bio-Fertilizers,	<u>Topics to be added:</u> Phosphate and Mg based fertilizers
EP 368	Plant Design I	Introduction to design, flow sheeting, design information and data. Studies involving application of chemical engineering economic principles to the design of selected chemical manufacturing process. Hazards, industrial safety, site location and plant layout. Detailed design procedure for selected equipment e.g. plate towers for distillation, design of liquid mixing systems, design of gravity settlers, reaction vessels .pumps, and compressors.	<u>Topics to be added:</u> Material selection.	<u>Topics to be added:</u> Process flow diagrams in petrochemical industries (PVC,PE,PS,etc..)
EP 339	Production of Plastics	This course provided an overview on the plastics industry. Comparison will be made to the polymer production industry, non-plastic manufacturing industries .Raw materials for plastics production, thermoplastics, thermoset	Biodegradable polymers	-----

		plastics, methods of plastics production.		
EP 390	Industrial equipment and material handling	Introduction to major equipment used in petrochemical industries. Pumps, heat exchangers, distillation columns, pressurized vessels and separators. Conveyors, cranes and packaging.	Scrubbers	Grinders, pneumatic conveying systems, silos and rotary valves.
EP 369	Plant design II	<p>Structure of chemical process systems and systematic methods for capital and operating cost calculations. Economic factors in design, economic balances, capital and operating cost estimation techniques, assessment of alternative investments and replacements, and application of compound interest calculations. Simple optimization theory.</p> <p>Evaluation of process alternatives. Equipment and materials selection. Factors such as energy, safety, hygiene, and environmental protection</p>	Integrated projects for attaining sustainability.	Structure of chemical process systems and systematic methods for capital and operating cost calculations in petrochemical industries.

EP 330	Energy Conservation (Elective course)	Different methods of energy conservation: electrical energy conservation, lightening, energy saving, heat energy saving, insulation, reusing of hot waste water, application of solar energy, smart building, equipment design, sensors and computer controlled processes.	It is recommended to modified in law 2020.	Not found in KTH report

5. Faculty of Languages and Translation

Presented by DR Omnia Salem

- After reviewing the module courses of the Spanish language Department, Faculty of Languages and Translation, we found that in the courses of 2018-2019 Sustainability in the Spanish Kingdom has been included and referred to in the course “ES 601 Spanish culture II”.
- The students learned about Sustainability in the Spanish society in economic and environmental life, in addition to learning about Spain's experiences in Sustainability in the fields of tourism, media, education and sports which revealed the most important achievements of the Kingdom in Sustainability in scientific and environmental circles.



General Evaluation of the Spanish department

Out of the SDGs 17 goals we found the following goals accomplished in the “ES 601 Spanish Culture II” course:

Goal 2: Zero Hunger: In the Spanish system of Hot House to plant organic clean and Healthy Food.

Goal 6: Clean Water and Sanitation: Spain has developed an advanced and sustainable system of irrigation.

Goal 7: Affordable and Clean Energy Solar plants and winds Park in Spain and as renewable, clean and sustainable energy sources.

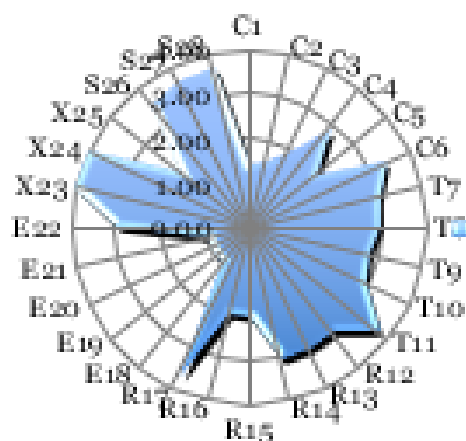
Goal 9: Industry, Innovation and Infrastructures: Sustainability in public transports and construction of roads and bridges.

During “ES 601 Spanish Culture II” course we worked on implementing the other SDGs which were not included in the course such as:

Goal 1: No poverty: The students made a research about the experience of Spain in eradicating poverty.

Goal 4: Quality Education: The Students wrote an essay about the Quality Education.

Goal 8: Decent work and Economic Growth: The students made a list of the documentary films about Economic Spanish Growth.



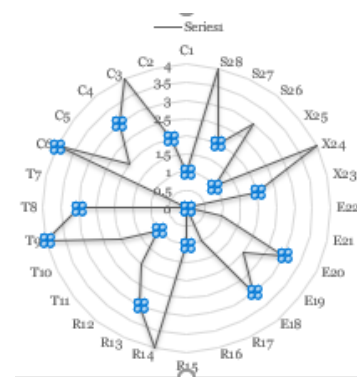
6. Faculty of Mass Communication

Represented by :

Dr. Tamer Soker
Dr. Ahmed Ibrahim
Dr. Hamdy Ahmed

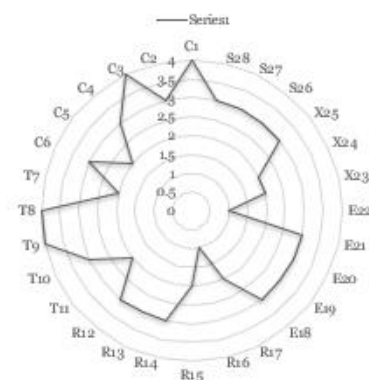
Current situation:

Course Code	Course Title	Credit Hours	Theoretical	Practical	Level
COM (103) N	Communication and Development	3	3	-	1st
COM (200) N	Public Opinion and its' methods of measurements	3	2	2	2nd
COM (204) N	Theory and Process of Communication	3	2	2	2nd
COM (202) N	Introduction to Mass Communication Research	3	2	2	2nd
COM (300) N	Media Law& Ethics	3	2	2	3rd
COM (305) N	Media and global awareness	3	3	-	3rd
(300) N	Laboratory	3	-	6	3rd
COM (403) N	Media literacy	3	2	2	4th
COM (405) N	Environmental communication	3	2	2	4th
COM (406) N	Political communication	3	2	2	4th
(404) N	Graduation project	6	-	12	4th



Targeted Goals

Goal	SDG
Goal 4.	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 10.	Reduce inequality within and among countries
Goal 11.	Make cities and human settlements inclusive, safe , resilient and sustainable
Goal 12.	Ensure sustainable consumption and production patterns
Goal 13.	Take urgent action to combat climate change and its impacts
Goal 16.	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Goal 17.	Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development



7. Faculty of Pharmacy and Drug Manufacturing

Represented by:

Prof. Dr. Hend Hussien

Dr. Mennatallah Ismail

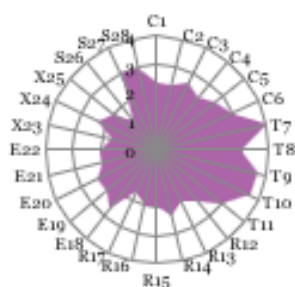
Dr. Ahmed Elnoby

Dr. Karin Magdy

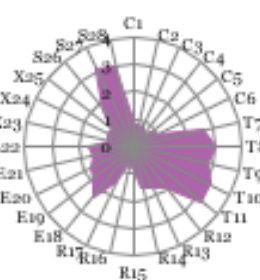
Evaluation of the current situation



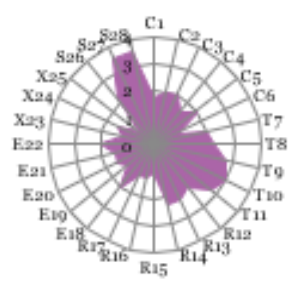
Pharmacognosy Department



Chemistry Department



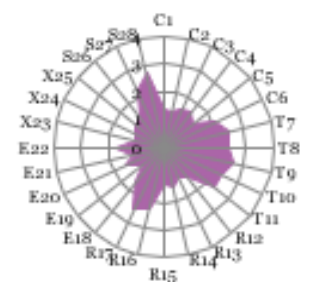
Microbiology Department



Pharmaceutics Department



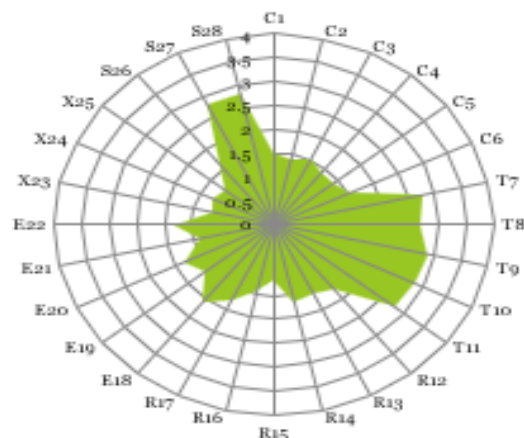
Pharmacology Department



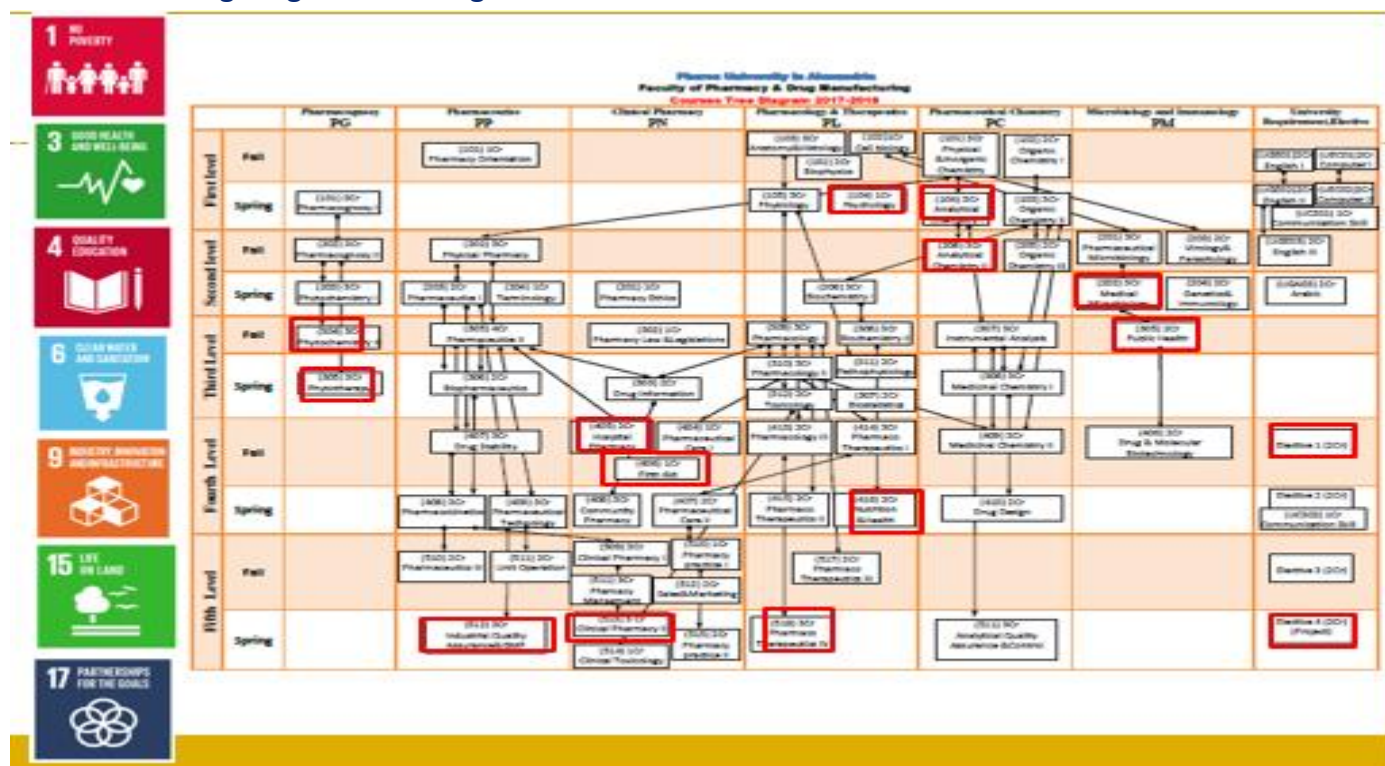
A general pattern was observed showing:

- ✓ An evident knowledge and willing from the staff members to integrate the sustainability concerns in the research & education process.
- ✓ An intermediate community engagement, as the faculty addresses the community *via* field and graduation projects
- ✓ Low integration of sustainability topics in our curricula and lack of examination of sustainability concerns in the student's evaluation process.
- ✓ A deficiency in research projects that address sustainability concerns in both students and staff research

Average Of Faculty of pharmacy New Bylaws Courses Fall 2018-2019

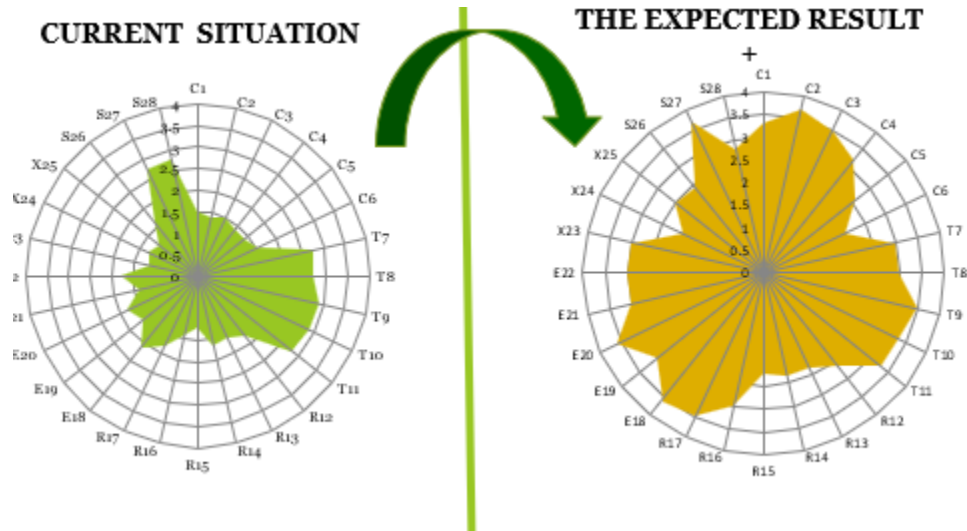


Courses targeting the following SDGs

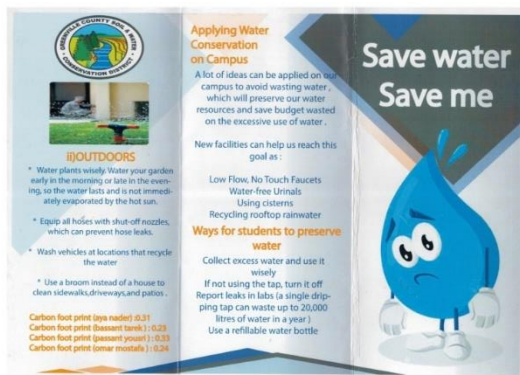
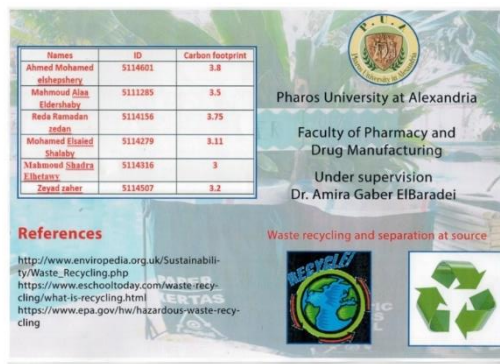
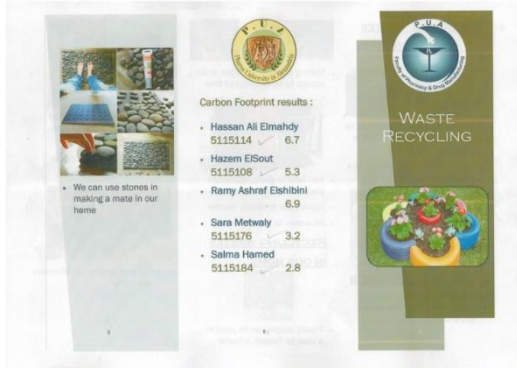


Expected results

Future Plans: Next semester, an integrated Graduation project related to the “Sustainability in Pharmaceutical Care” will be coordinated between all the faculty departments.



Examples:



8. Faculty of Physical Therapy

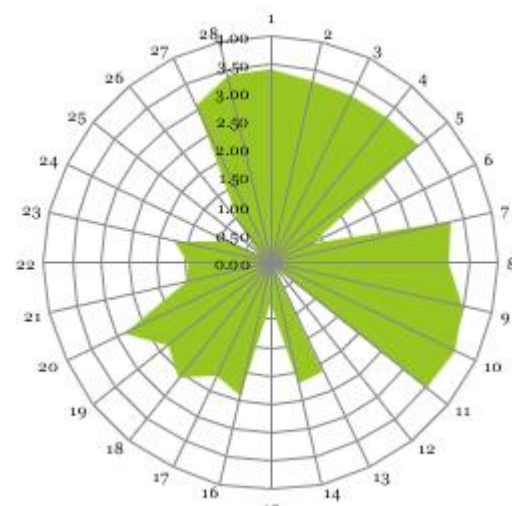
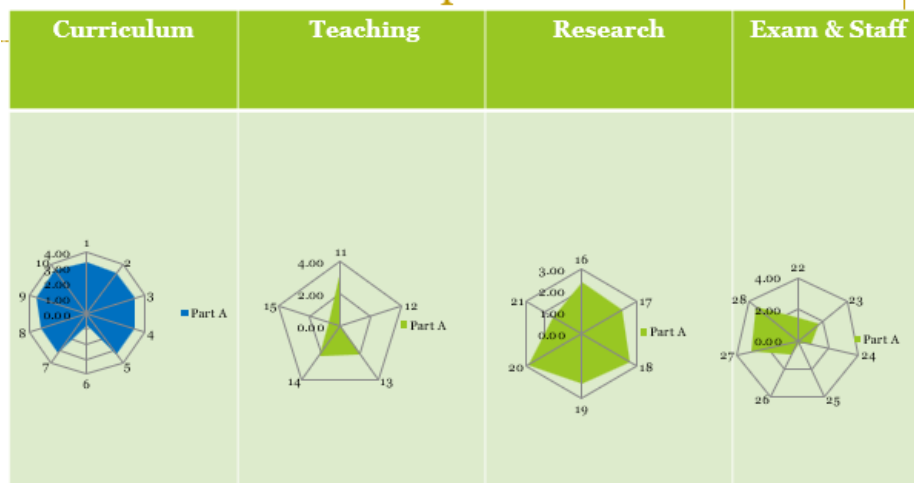
Represented by:

Dr. Bohaysa Ali
Dr. Nehal Ahmed
Dr. Rehan Gamal

current relationship between subjects and indicators

Subject	Nature	Economy	Society	Well-being
Biophysics	✓			
Electrotherapy				✓
Business		✓		
Geriatric			✓	
Hydrotherapy				✓
Internal				✓
Integumentary			✓	✓
Manual therapy				✓
Neurology			✓	
Orthopedics			✓	
Pediatrics			✓	
Pathology	✓			
Woman health			✓	✓
Public health			✓	✓
psychology			✓	

Before improvement



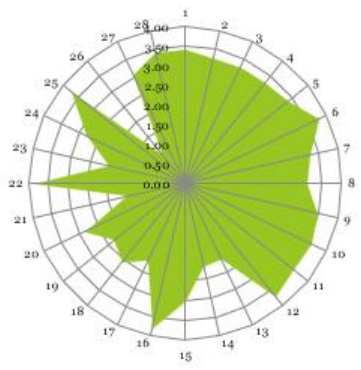
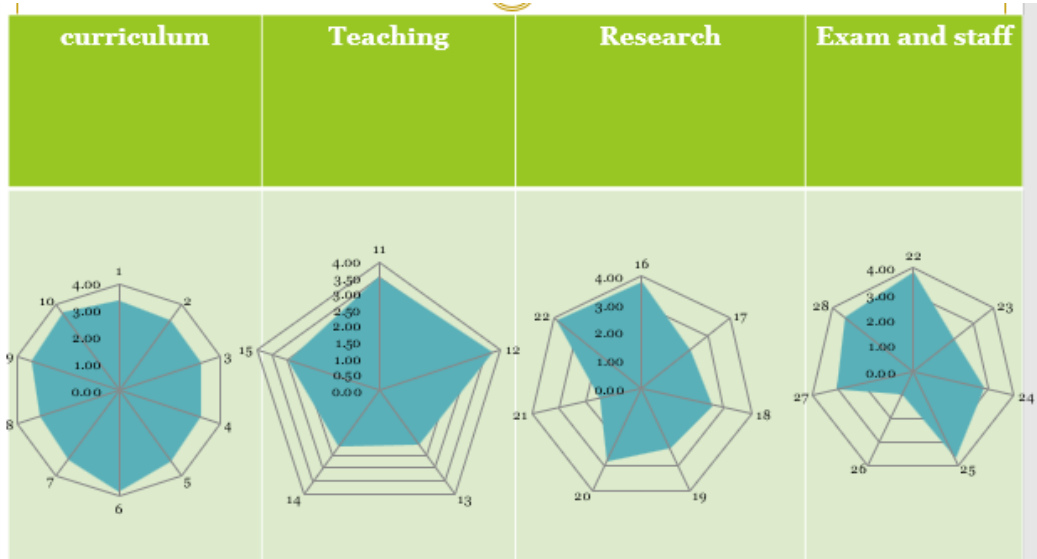
Before improvement

Items	SDGS	comment
curriculum	4	1- Insufficient staff 2- High turnover rate
teaching	4	Already taking steps in setting sustainability principles
research	3 4	1-No awareness about sustainability 2- Lack of data
Community	1 3 4	Not activated yet
Exam	4	Not activated yet
staff	4	Not <u>sufficient</u>

After improvement

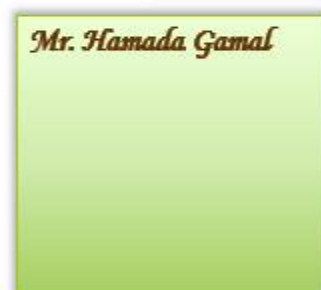
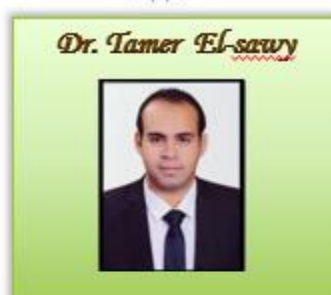
Items	SDGS	comment
curriculum	4	Begin sustainability topics in different subjects
teaching	4	Enhancing the cooperation between the different departments of faculty of physical therapy
research	3 4	Carrying out epidemiological studies to construct reliable database
Community	1 3 4	1-Activating the role of the outpatient clinic to serve the largest sector of society and developing the practice skills of students . 2-Engaging sustainable working environment in the clinics
Exam	4	
staff	4	Enhancing the cooperation between the different departments of the faculty and the other faculties in the medical field

After Improvement



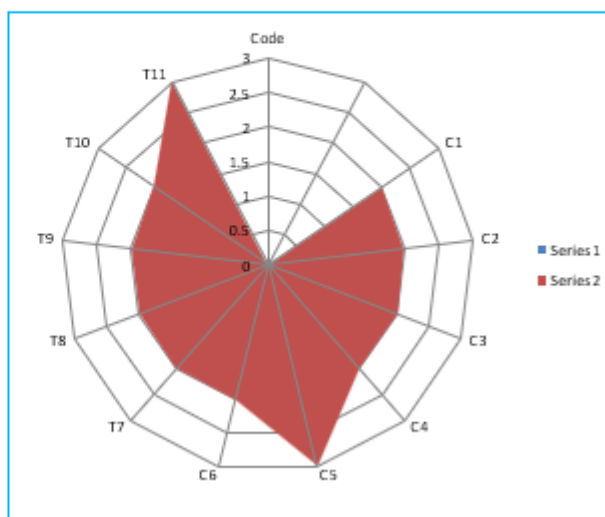
9. Faculty of Tourism and Hotel Management

Represented by:



Assessing the Status Quo Tourism Department Part A Teaching – research – community service

Code	Curriculum	
C1		2
C2		2
C3		2
C4		2
C5		3
C6		2
Code	Teaching approach	
T7		2
T8		2
T9		2
T10		2
T11		3



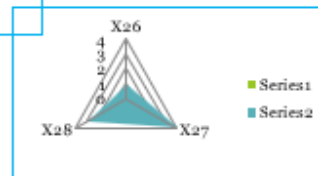
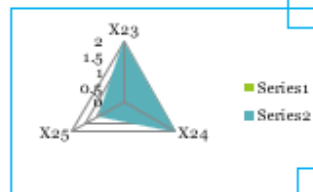
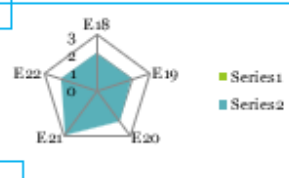
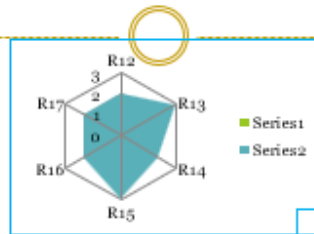
Assessing the Status Quo Part A (research –community engagement- examination –self expertise)

Code	Research and Scholarship activities
R12	2
R13	3
R14	2
R15	3
R16	2
R17	2

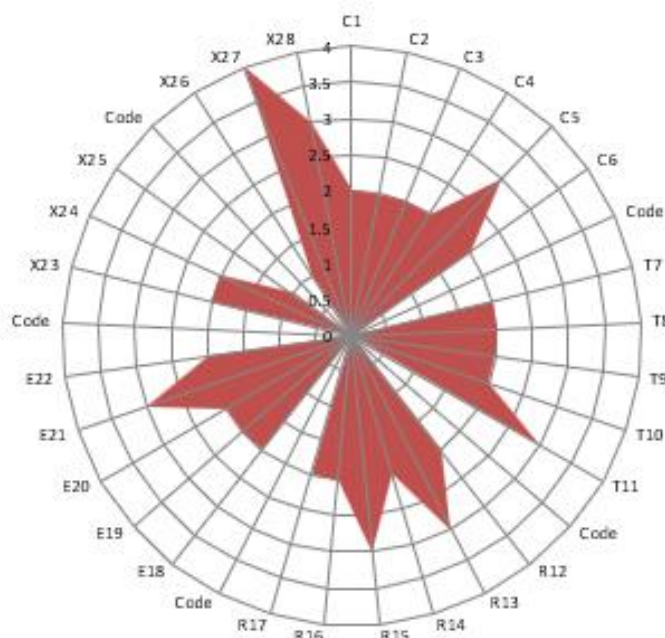
Code	Community Engagement
E18	2
E19	2
E20	2
E21	3
E22	2

Code	Examination (assessment) of sustainability topics
X23	2
X24	2
X25	1

Code	Self expertise and willingness to participate
X26	1
X27	4
X28	3



General Condition



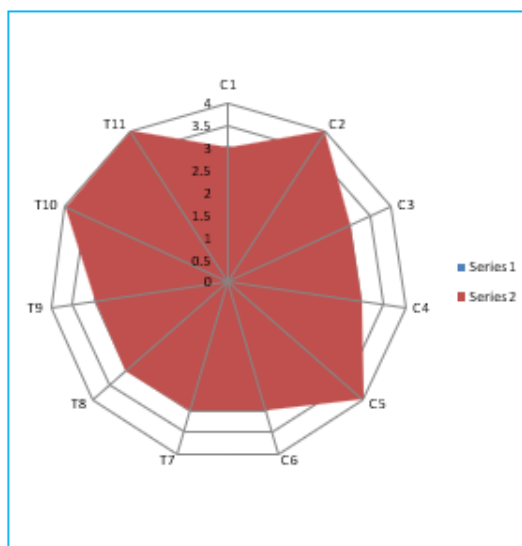
Proposed Actions for Improvements

- **Curriculum:**
 - Increasing number of courses that engages sustainability issues
 - Intensifying the initiative and effort to solve problems related to local and international sustainability issues through the field project of the courses
 - Promoting the collaboration in teaching sustainability among faculty staff and departments.
- **Teaching:**
 - Developing the teaching approach for more contribution to development of students skills in disciplines such as : the capacity to make informal decision – critical thinking – Respect
- **Research:**
 - Encouraging the staff and students to get involved in research and scholarship in the area of sustainability
 - The department's research plan include local sustainability issues and challenge
 - Promoting the collaboration with other faculties and stakeholders in pursuit of solutions to sustainability problems
- **Community:**
 - Encouraging the staff and students to be involved in the community engagement in the area of sustainability.
 - Developing the plan of community service based on the local sustainability issues and challenges.
- **Examination:**
 - Developing the assessment methods of the courses to include assessment measures for sustainability aspects
 - Developing the assessment criteria of projects to consider the sustainability aspects.
- **Self-expertise:**
 - Holding a series of workshops and training sessions on sustainability issues and aspects

Expected results foreseen 2020-2022 Tourism Department

Part A Curriculum - Teaching – research – community service

Code	Indicator	
	Curriculum	
C1		3
C2		4
C3		3
C4		3
C5		4
C6		3
	Teaching approach	
T7		3
T8		3
T9		3
T10		4
T11		4



General Condition

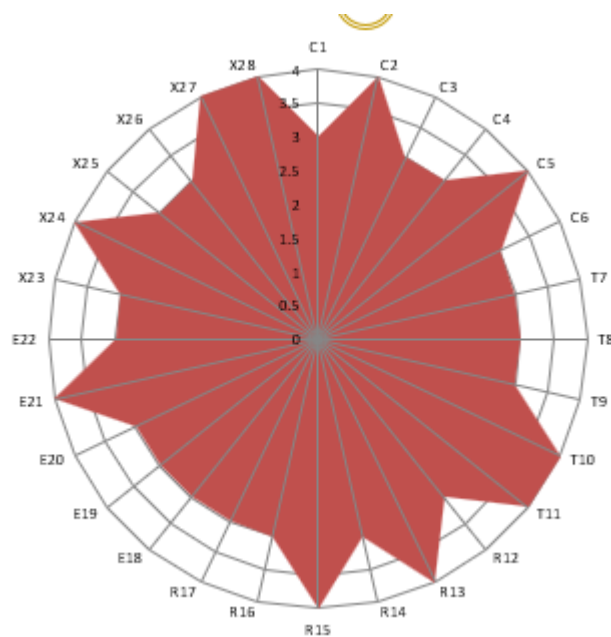
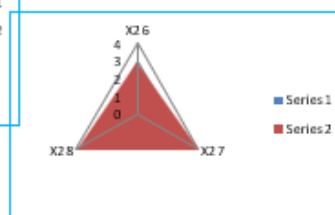
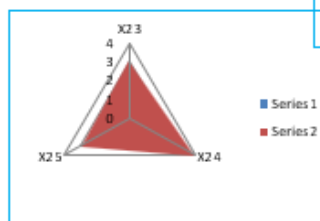
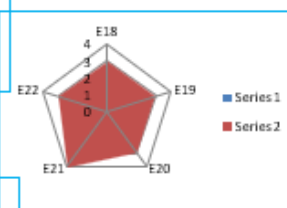
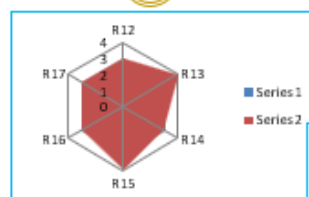
Expected results foreseen 2020-2022 Tourism Department Part A (research –community engagement- examination –self expertise)

Code	Research and Scholarship activities
R12	3
R13	4
R14	3
R15	4
R16	3
R17	3

Code	Community Engagement
E18	3
E19	3
E20	3
E21	4
E22	3

Code	Examination (assessment) of sustainability topics
X23	3
X24	4
X25	3

Code	Self expertise and willingness to participate
X26	3
X27	4
X28	4



Examples



Celebration Sustainable tourism Day

- A seminar was held on the sidelines of the celebration of the Tourism International Day to discuss the theme chosen for this year: **Sustainable Tourism- a Tool for Development**. The seminar also discussed the opportunities and challenges of sustainable development of tourism in Egypt.



The 1st International Conference ICET under the title of
Entrepreneurship in the Tourism, Hospitality and Heritage Industry in Egypt, "A Future
Vision for Sustainable Development",



Part 3: General Recommendations

University Level

1. Implementation sustainability concepts in University courses
2. Participation in international competitions related to sustainability
3. Integration between and within faculties of the university in research related to sustainability
4. Establish a unit for sustainable development at the university
5. Holding a university annual SD conference
6. Implement sustainability practices e.g.
 - a) Use the digital communications to reduce the usage of paper and ink & different materials .
 - b) Install solar photo-voltage capacity
 - c) Encourage University's own transportation
 - d) Develop an "PUA Transportation app" to create a carpooling network and include an interactive bus schedule/map.
 - e) Convert indoor lighting to LED lamps and outdoor lighting to LED lamps or solar-powered lighting.
 - f) Install motion sensors in all corridors
 - g) Add sorting stations and an efficient campus compactor.
 - h) Circulate weekly sustainability awareness tips using email.
 - i) Form a sustainability student team to patrol campus and target high emitters (emission police).

Faculty Level:

1. Motivate professors to do more research related to sustainability
2. Communication with stakeholders to apply innovative solutions or problems related to sustainability
3. Use of Education for sustainable development as a tool of education and learning
4. Hold workshops to introduce and apply Sustainability to students and staff
5. Introducing a new course entitled "Introduction to Sustainability" (3 credit hours, two hours lecture and one hour practical) that deals with Sustainability, its goals and plans

Student Level:

1. Introducing sustainability to students in related topics
2. Targeting SDGs in all graduation projects
3. Motivate students to share in sustainability activities through an annual competition of the best project in the field of sustainability

Part 4. References:

Cortese, A.D. (2003), "*The critical role of higher education in creating a sustainable future*", *Planning for Higher Education*, Vol. 31 No. 3, pp. 15-22.

Ferrer-Balas, et al (2008) An international comparative analysis of sustainability transformation across seven universities. *International Journal of Sustainability in Higher Education*, Vol. 9 No. 3, pp. 295-316. <https://doi.org/10.1108/14676370810885907>

Lozano, R. (2006), "*Incorporation and institutionalization of SD into universities: breaking through barriers to change*", *Journal of Cleaner Production*, Vol. 14 Nos 9-11, pp. 787-96.

Max Neef, M.A. (2005), "*Foundations of transdisciplinarity*", *Ecological Economics*, Vol. 53, pp. 5-16.

Sterling, S. (2005), "*Higher education, sustainability, and the role of systemic learning*", in Blaze Corcoran, P.B. and Wals, A.E.J. (Eds), *Higher Education and the Challenge of Sustainability: Problematics, Promise and Practice*, Kluwer Academic Press, Dordrecht.

UNESCO Publication 2017. Education for sustainable development: learning objectives. [file:///C:/Users/Win/Downloads/education for sustainable development learning objectives.pdf](file:///C:/Users/Win/Downloads/education%20for%20sustainable%20development%20learning%20objectives.pdf)

Van Dam, R. (2006), "*Learning for sustainable development: is it possible within the established higher education structures?*", in Holmberg, J. and Samuelsson, B. (Eds), *Drivers and Barriers for Implementing Sustainable Development in Higher Education*, Unesco, Paris.

Wals, A.E.J. and Blaze Corcoran, P. (2006), "*Sustainability as an outcome of transformative learning*", in Holmberg, J. and Samuelsson, B. (Eds), *Drivers and Barriers for Implementing Sustainable Development in Higher Education*, Unesco, Paris.

Appendix 1. Content of Awareness workshops

Title	Objectives	Content	ILOs
General overview of the current situation	<ul style="list-style-type: none"> Demonstration of the current status : Development reconsidered Identify of the concept of great acceleration 	<ul style="list-style-type: none"> - Development reconsidered - Living in the Anthropocene - Sustainability as an alternative - The great acceleration - Production and consumption patterns 	<p>By the end of the presentation audience will be able to :</p> <ul style="list-style-type: none"> - Assess the current situation; the great acceleration - Recall the Anthropocene - Recognize the current production and consumption patterns
The age of Sustainable development	<ul style="list-style-type: none"> Defining the concept of sustainability and the key trends Identifying the general role of indicators in sustainability initiatives 	<ul style="list-style-type: none"> - What does it mean? - The sustainability Compass - Sustainable society index - A shift in mindset - Key trends - Ecological footprints 	<p>By the end of the presentation audience will be able to :</p> <ul style="list-style-type: none"> - Comprehend the meaning of sustainable development - Interpret the sustainability compass - Define criteria of the sustainability Index - Describe the graph of Hope - Identify key trends - State the difference between SDGs and MDGs - Identify sustainability indicators -
The united Nations Development Agenda	<ul style="list-style-type: none"> Introducing the international move towards sustainability Recognition of the needs for a reform Agenda Overview on University Contribution to SDGs Introducing Green Economy 	<ul style="list-style-type: none"> - Millennium development Goals - What are SDGs and MDGS - Why a country like Egypt needs sustainability? - Contributions from academics - Thoughts of the future of university actions towards SDGs - The age of green technology and scenarios 	<ul style="list-style-type: none"> - Review the MDGs and SDGs - Assess the situation in Egypt - Discuss future university actions - Discover green economy importance and trends

		- Demonstration of green economy	
Education for sustainable development	<ul style="list-style-type: none"> • Introducing ESD • Assessing sustainability in the syllabi 	<ul style="list-style-type: none"> - Rethinking Education - Application of ESD - Introducing USAT tool 	<ul style="list-style-type: none"> - Recognize ESD and its applications - Implementation of the USAT tool - Assessment of an example of a current curriculum
Planning Change for sustainable development	<ul style="list-style-type: none"> • Gain command of fundamentals of sustainable development • Environmental footprint 	<ul style="list-style-type: none"> - A fresh look at sustainable development - Introducing new method for applying sustainability - Calculating different types of footprints. 	<ul style="list-style-type: none"> - Comprehending of the great acceleration of the changing world - Analyzing Conditions and trends - Application of ISIS method - assessing impacts and hand prints
	<ul style="list-style-type: none"> • Introduction to the InS.InS .Method • Get hands-on practice in using the InSInS Method 	<ul style="list-style-type: none"> - Overview on A new method for sustainable development 	<ul style="list-style-type: none"> - Examining Indicators, system thinking, Innovation, and strategy (InS.InS)
	<ul style="list-style-type: none"> • empowered to work more effectively as a Change Agent for sustainability 	<ul style="list-style-type: none"> - Generation of new ideas for change project - Introduction to Amoeba 	<ul style="list-style-type: none"> - Identifying Key indicators and trends (trend graphs) - Identifying Sustainability indicators and compass
	<ul style="list-style-type: none"> • Exploring ideas • Emphasis on System Thinking • Addressing your ideas • Changing Projects: 	<ul style="list-style-type: none"> - Cultural change - Role and writing the theory of change 	<ul style="list-style-type: none"> - Applying Trend analysis - Exploring connections - System thinking - Innovations within your system - Leverage points - Crating Theory of change
Advanced	<ul style="list-style-type: none"> • Strategies • Designing a success project 		-

Appendix 2. Focal Team representing Faculties of the university

No	Name	Title	Faculty
1	Tamer Mohamed Salah Eldin Sokar	Assistant Professor	Mass Communications
2	Ahmed Ibrahim	Lecturer	
3	Hamdy Ahmed Ali Hamed	Lecturer	
4	Ahmed Abdelaleem Elagami	Assistant Professor	Legal Studeies and International Relations
5	Mohamed Mahmoud Gaber Badawi	Lecturer	
6	Walid Hassan Fahmy	Assistant Professor	
7	Mahmoud Ahmed Abelraouf	Lecturer	Tourism and Hotel Management
8	Dalia Hassan	Lecturer	
9	Tamer Elsawi	Lecturer	
10	Amal Abou Eldahab	Assistant lecturer	
11	Hamada Gamal	Assistant lecturer	
12	Karin Magdy Guirgis	lecturer	Pharmacy and Drug Manufacturing
13	Mennatallah Ahmed Ismail Ali	Lecturer	
14	Ahmed Noubi	Lecturer	
15	Hend Mohamed Hussein Emam	Assistant Professor	
16	Bohaysa Ali Ismail	Lecturer	Physical Therapy
17	Rehan Gamal Abdelnaser	Lecturer	
18	Nehal Mahmoud Abou Samra	Lecturer	
19	Amany Salama	Lecturer	Allied Medical Sciences
20	Ehab Barakat	Lecturer	
21	Hadeel Saeed Tawfik	Lecturer	
22	Rania Assem	Lecturer	
23	Mostafa Shalash	Lecturer	Financial and Administrative Sciences
24	Mohamed Hammad	Lecturer	
25	Ahmed Genedy	Lecturer	
26	Dalia Mostafa Younes	Lecturer	Arts and Design
27	Eman Ahmed Ramzy	Professor	
28	Shimaa Mohamed Khodeir	Lecturer	

29	Omnia Abdelrahman Ismail	Lecturer	
30	Hanan Sobhy Mohamed Ebrahim	Professor	
31	Ahmed Mohamed Abdellatif	Assistant Professor	
32	Mohamed Farid	Lecturer	Languages and Translation
33	Omneya Ahmed Mahmoud Salem	Lecturer	
34	Nancy Ramez Bedwani	Lecturer	
35	Walid Ahmed Lotfy	Lecturer	Dentistry
36	Sherif Saeed Darwish	Lecturer	
37	Sara Saeed	Lecturer	
38	Sahar Abdelmonem Moussa	Lecturer	
39	Sanaa Abdeldayem	Lecturer	Engineering
40	Amr Elsaadny	Lecturer	
41	Alaa Mahmoud Khalil Ahmed	Lecturer	
42	Fathy Ahmed Shokry	Assistant lecturer	
43	Amr Mamdouh Ahmed	Demonstrator	
44	Wegdan Wagdy	Lecturer	
45	Noha Saeed Yousef	Assistant Professor	
46	Rania Farouk Abdou	Assistant Professor	
47	Nourhan Ebrahim Ghoneim	Lecturer	

Appendix 3 USAT

The USAT is designed to establish to what level universities have integrated sustainability concerns in teaching, research and community service, but also considers organisational level and management unit contributions, student initiatives and policy statements (similar to SAQ, AISHE and GASU). Like these other three tools, it is an indicator-based tool. It is divided into four parts for ease of administration:

- Part A pays particular attention to the core mission of universities and covers curriculum, teaching approach, research, community service activities, examinations/ assessment and staff expertise. It is targeted at heads of teaching departments (HODs) to give their impression on the indicators.
- Part B deals with other university operations and the management of the university, including the estates division and management divisions such as human resources, planning and research.
- Part C deals with student activities which may be linked to, or independent of the other parts.
- Part D focuses on policy including institutional written statements.
-

The USAT therefore facilitates a quick identification of departments leading, and departments lagging in sustainability as well as detection of the areas (indicators) in which they are leading or lagging. It therefore simplifies more complex emergent properties, but helps to identify areas of change and success through a relatively rapid assessment technique. Though the USAT is designed to be used at departmental/institutional unit level, the results representing the performance of various departments can be averaged to get the overall performance of the institution. Not all the teaching departments or institutional units at a university need necessarily be included in the survey though it is important to have all faculties represented if the results are to represent overall university sustainability performance.

Indicators: Part A of USAT: Teaching

The first part of the USAT (Part A) is for use in academic departments, or research and teaching units. It makes use of twenty indicators grouped under five clusters. These are:

Indicator cluster 1: *Curriculum*: Indicators in the curriculum cluster are meant to establish if the department offers courses which deal with sustainability concerns and the integration of sustainability topics in such courses. They also determine the degree to which local and global sustainability issues and challenges form part of the department's teaching programme and the extent to which the department enrolls students in courses that engage sustainability concerns. In addition, it is intended to establish the extent of cross faculty collaboration in teaching sustainability topics.

-
- Indicator cluster 2: *Teaching approach* : This cluster of indicators determines how far teaching approaches contribute to the development of critical thinking skills, capacity to make informed decisions, a sense of responsibility, respect for the opinions of others and integrated problem solving skills among students.
 - Indicator cluster 3: *Research/ and scholarship activities*: Indicators falling under this group determine the extent to which staff and students in the department are involved in research and scholarship activities in the area of sustainability; and the degree to which local and global sustainability issues and challenges form part of their research activities. They are also meant to establish if there is collaborative research between the department and other stakeholders in pursuit of solutions to sustainability problems.
 - Indicator cluster 4: *Community service*: This cluster of indicators is meant to establish the level of involvement of departments in sustainability related community engagement activities and the extent to which each department commits its resources to such projects. It is also intended to determine the level to which this involvement helps in addressing sustainable development challenges in the local community
 - Indicator cluster 5 *Examination / assessment of sustainability topics*: The indicators under examination/assessment of sustainability topics attempt to establish the extent to which issues are examined or assessed and the extent to which they are considered in evaluating projects or traineeships> if a clearly visible examination or assessment of sustainable development issues and topics is absent, students may get the impression that sustainability is a kind of secondary consideration.
 - Indicator cluster 6: *Staff expertise and willingness to participate* in sustainability teaching and research: The intention of indicators under this cluster is to determine staff expertise in the area of sustainability and to establish their willingness to carry out sustainability research and community service and teach sustainability topics. Expertise in the area of sustainability is essential in improving integration of sustainability issues in a department's activities. Without that expertise it becomes difficult to carry out sustainability research and to teach sustainability topics.

These have been coded for easier tabular/graphical representation of results. The curriculum cluster has six indicators (C1-C6), teaching approach has 5 (T7-T11), research and scholarship activities has six (R12-R17). Community engagement/community service is composed of five indicators (E18-22). Examination of sustainability topics is composed of three (X23-X25) and staff expertise and willingness to participate has three (S26-S28).

Unit-based Sustainability
Assessment Tool

Assessment Criteria

Rating

X	=	Don't know	no information concerning the practice
0	=	None	there is total lack of evidence on the indicator
1	=	A little	evidence show poor performance
2	=	Adequate	evidence show regular performance
3	=	Substantial	evidence show good performance
4	=	A great deal	excellent performance

PART A
Teaching, Research and Community Service

		Score					
Code	Indicator	x Don't know	0 None	1 A little	2 Adequate	3 Substantial	4 A great deal
	Curriculum						
C1	The extent to which the department offer courses that engage sustainability concerns						
C2	The level of integration of sustainability topics in courses referred to above						
C3	The degree to which local sustainability issues and challenges form part of the department's teaching programme						
C4	The degree to which global sustainability issues and challenges form part of the department's teaching programme						
C5	The extent to which the department enrol students in courses that engage sustainability concerns						
C6	The level of cross faculty collaboration in teaching sustainability programmes						
	Teaching approach How far the teaching approach contributes to development of the following characteristics among students:						
T7	The capacity to make informed decisions						
T8	Critical thinking skills						
T9	A sense of responsibility						
T10	Respect for the opinions of others						

T11	Integrated problem solving skills						
	Research and scholarship activities						
R12	The extent to which the department (staff and students) is involved in research and scholarship in the area of sustainability						
R13	The degree to which global sustainability issues and challenges form part of the department's research						
R14	The degree to which local sustainability issues and challenges form part of the department's research						
R15	The extent to which the department is collaborating with other faculties, institutions and stakeholders in pursuit of solutions to sustainability problems						
R16	The extent to which aspects of sustainable development are used in selection/execution of research						
R17	The level to which aspects of sustainable development are reflected in the department's research outputs						
	Community Engagement						
E18	The extent to which the department (staff and students) is involved in community engagement in the area of sustainability						
E19	The level of commitment of the department's resources in sustainability projects in the community						
E20	The degree to which local sustainability issues and challenges form part of the department's community engagement						
E21	The extent to which the department collaborates with other stakeholders in addressing community sustainability challenges						
E22	The extent to which aspects of sustainable development are used in selection/execution of community engagement projects						
	Examination (assessment) of sustainability topics						
X23	The extent to which sustainability aspects are assessed/examined during course						
X24	The extent to which sustainability aspects are considered in evaluating/assessing projects						
X25	The degree to which sustainability aspects are assessed in evaluating service learning programmes						
	Staff expertise and willingness to participate						
S26	The level of expertise of staff members in the area of sustainability						
S27	The extent to which staff members are willing to carry out research and service activities on sustainability aspects/topics						
S28	The extent to which staff members are willing to teach sustainability topics						
	Others (please specify):						

Indicators: Part B of USAT: Operations and Management

The first part of the USAT by design targets teaching departments and hence emphasises the core functions of the university leaving out other management practices. The second part is dedicated to other university operations and management practices.. It covers university operations that fall outside of teaching, research and community service. These include waste management practices, air pollution, energy, water conservation, landscaping, pest management, transportation programmes and purchasing. Part B of the USAT gives an option to add any other sustainability operations in a university context not mentioned in the list. It also includes management practices, for example staff recruitment and staff development, research funding allocations and academic planning. These practices were included since they have potential to influence the sustainability of other university units. To cite an example, the undertaking of sustainability research in teaching departments and research institutes can be influenced by the allocation of funds for such projects by the university research division.

Code	Practices	Rate	Key area	Inadequate info	Reasons for implementing the practice	What can be done to improve the sustainability of the practice?
WR1	Waste reduction practices					
RW2	Recycling of solid waste (including paper, plastic, metal, etc.)					
TW3	Source reduction of toxic materials and radioactive waste					
AP4	CO ₂ and air pollution reduction practices (including alternative fuel use, renewable energy sources, emission control devices, etc.)					
AQ5	Indoor air quality standards and practices					
BC6	Building construction and renovation based on ecological design principles					
EC7	Energy conservation practices (in offices, laboratories, libraries, classrooms and dormitories)					
LP8	Local food purchasing programme					

PE9	Purchasing from environmentally and socially responsible companies (including buying and using 100% post consumer chlorine free paper)					
OP10	Organic food purchasing programme					
TP11	Transportation programme (including bicycle/pedestrian friendly systems, car pools, bus pass programmes, electric/natural gas campus vehicles)					
BF12	Use of bio-fuel (not sourced from food production land)					
WC13	Water conservation practices (including efficient shower heads and irrigation systems)					
PM14	Integrated Pest Management practices (including reduction of pesticides to control weeds)					
SL15	Sustainable landscaping (emphasizing native plants, biodiversity, minimising lawn, etc.)					
OE16	Integration of sustainability operations into the educational and scholarly activities of the university					
RB17	The presence of a body responsible for sustainable development at the institution					
SH18	Consideration of aspects of sustainability in staff hiring decisions					
OR19	Consideration of aspects of sustainable development in orientation programmes for new staff members					
ST20	Staff development in sustainable development					

RE21	Staff rewards for sustainable development related activities					
IP22	Consideration of aspects of sustainable development in institutional planning					
RF23	Allocation of research funds for sustainability projects					
AW24	Awareness raising in sustainable development					
SV25	Visibility of sustainable development through celebration of environmental days (e.g. Arbor day, water week etc)					
	Others (please specify):					

Indicators: Part C of USAT : Student Involvement

Another aspect to consider in university wide sustainability assessment is the way students are involved in the operational management in the university (e.g. are student groups involved in recycling, waste management or energy saving initiatives on campus?), and how students think about and participate in sustainability issues. Part C of USAT draws on a set of indicators for student involvement in sustainability issues. The indicators in the USAT Part C include assessment of student involvement in voluntary activities related to sustainability, student orientation programmes and career counselling, student politics and governance for sustainability, collaboration of students and management on sustainability issues, and student involvement in sustainability practices in residences (amongst others

Code	Activities and opportunities	Rate	Key Area	Inadequate info	Outline of activities (what exactly is being done?)
SC1	Student Environmental Centre				
CC2	Career counselling focused on work opportunities related to environment and sustainability				
ES3	Environmental societies or other Student Group(s) with an environmental or sustainability focus				

SD4	Sustainability practices in residences or dormitories by students (e.g. recycling)				
OP5	Orientation programme(s) on sustainability for students				
SA6	Student environmental and sustainability awareness programmes				
VS7	Voluntary community service by students related to sustainability issues and concerns				
SI8	Involvement of student groups across campus in sustainability initiatives				
SR9	SRC involvement in environmental and sustainability initiatives				
SM10	Student collaboration with management in the area of environmental and sustainability				
ES11	Environmental and sustainability activities initiated by students themselves (independent of departments, lecturers, management etc.)				
SW12	Students' willingness to take responsibility in the environmental and sustainability area				
	Others (please specify):				

Policy Indicators: Part D of USAT: Policy and written statements

Part D of the USAT is designed to assess sustainable development related policy at various levels, and other university written statements. It also partly draws from the SAQ (ULSF, 1999). It is targeted at

university managers. At national level, Part D focuses on integration of sustainability in higher education policy and the degree to which such higher education policy is shaped by national and global sustainability issues and policy. It also considers the level to which institutional policies and written statements reflect mainstream sustainability issues, and the degree to which they show commitment of the university to national and global sustainable development agendas. According to ULSF (1999), institutional commitment to sustainability can also be expressed through written statements of the mission and purpose of the institution.

Code	Practices	Rate	Key Area	Inadequate info	Elaborate on the situation	What can be done to improve the situation?
PH1	The extent to which the country's HE policy reflects an engagement with sustainability concerns					
PN2	The degree to which national and global sustainability issues inform decision making processes in HE policy and structures					
PS3	The level of support given to HE institutions on sustainability programmes					
PE4	Existence of sustainability/sustainability related policies at the institution					
PR5	Integration of sustainability issues in institutional policies					
PV6	Integration of aspects of sustainable development in university vision and mission statement					
PC7	Reflection of local sustainability challenges in policies and written statements					
PG8	The degree to which policies and written statements reflect national and global sustainability issues					
PI9	Implementation of policies of sustainability/sustainability related policies					
PP10	Plans to improve sustainability focus in the next policy review cycle					
	Others (specify):					

Rating Part A, B, C and D of USAT

The indicators under USAT Part A are rated by the head of each teaching department/unit forming part of the study, using the given assessment criteria. For USAT Part B, the head of the department or management unit responsible for the practice should undertake the assessment. For USAT Part C, the Student Representative Council or a similar student leadership body can undertake the assessment while for Part D those in university management are targeted, for example, the Deputy Vice Chancellor. The rating is based on evidence indicating the presence of the identified indicators and practices. This results in ordered response levels . Respondents select the rate from six choices ranging from X to 4 where:

- X (don't know) indicates a lack of information concerning the practice but not necessarily an absence of such information.
- 0 (none) indicates the absence of information regarding the indicator in question; this is an equivalent of about 0% of such information.
- 1 (a little) indicates that the evidence shows poor performance in the concerned indicator and this is about 25% of full information regarding the indicator.
- 2 (adequate) indicates that the evidence shows regular performance, about 50% of full information required by the indicator.
- 3 (substantial) indicates that the evidence shows good performance about 75% of full information.
- 4 (a great deal) indicates that the evidence shows excellent performance more than 75% of full information.

Appendix 5 . list of items suggested to be added to the curricula per faculty in the universities.

Faculty of Arts and design

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S.	Courses related to the foundations and the principles of Interior design in different spaces also the interior design for theatre and cinema	Course Code	Sustainability Topic to be addressed in curricula
1	INTERIOR DESIGN-1	D221	1. Footprint 2. Hazard of chemicals 3. Reduce pollution (Using less of papers & colours)
2	INTERIOR DESIGN-2	D222	1. Reduce pollution (Using less of papers & colours) 2-Natural alternatives for cost reduction
3	INTERIOR DESIGN-3	D321	1. Reduce pollution (Using less of papers & colours) . 1. Using Recycling Materials In interior
4	INTERIOR DESIGN-4	D322	1. Design Multi- Functional Furniture. 2. Furniture Design From Nature Materials
5	Interior Architecture Design -1	ID421	1. Activation of sustainable design in interior Architecture. 2. Using clean energy 3. Furniture design from nature

6	Interior Architecture Design -2	ID422	1. Activation of sustainable design in interior Architecture. 2-Natural alternatives for cost reduction
7	Interior Architecture Design -3	ID521	1. Using technology in design 2. Activation of sustainable design in interior Architecture. 3. Multi- functional Furniture 4. Using Recycling materials in interior design .

Faculty of Engineering
Department of Basic Sciences

Sales and marketing	English	Physics-1	Physics-2
<p>A "Green Marketing Strategy course" where the two course projects are to 1) produce a Design for Sustainability Plan following UNEP Guidelines for Sustainable Innovation, and 2) develop a Marketing Plan for the D4S innovation.</p>	<p>students should use the former bases in building structural writing essay in one of the environmental problems in students' living area.</p>	<p>Thermodynamics laws and thermal efficiency and heat flow and Fluid dynamics climate change, greenhouse gases, nuclear and solar energy, our Nation's energy supply, etc.</p>	<p>treatment of electricity and magnetism, including AC circuits, power transmission, energy of electromagnetic waves, etc.</p>

Modern Physics	Math-1	Math-2	Math-3
<p>important discoveries in quantum physics underlie advances in sustainable energy production.</p>	<p>Sustainability themed problem solving in data structures</p>	<p>Sustainability themed problem solving in data algorithms</p>	<p>Energetic sustainability of routing algorithms for energy-harvesting wireless sensor networks</p>

Applications include atoms, molecules, solids, nuclei, and elementary particles.	Understanding the math of exponential growth and limits to growth is essential for environmental literacy		Mathematical formulae & Models may be applied to test the structural and functional soundness of the design before it is mass produced,
	Usefulness of Mathematics in Human Daily Activities		

Computer skills	Risk and Safety	Technical Report writing	Principles of law	Engineering Environment
include components dedicated to sensor networks and their use in performing environmental monitoring.	Relate safety issues to the design and operation of equipment to their disciplines Recognize suitable mitigation techniques to eliminate or reduce hazards	Demonstrate effective communication, report writing, presentation and entrepreneur skills.	Describe current regulations and law relating to health, safety and environment and the role of engineers and technologists as HSE personnel or employee. Understand the importance of behaving in a professional and ethical manner	Evaluate and relate environmental hazards and concerns with regards to key principles of sustainable development intersection of communication and human experience with environment: everything from debates

				<p>between different groups over the preservation, conservation, or use of land, the meaning of land, sense of place, spirit of place, the relationship between environment and identity, the ways that our understanding of environment is grounded in culture, the psychology of environment, even the meaning of water.</p>
				<p>Introduction to environmental science as related to the protection, remediation, and sustainability of land, air,</p>

				<p>water, and food resources.</p> <p>Emphasis on the use of the scientific method and critical thinking skills in</p> <p>understanding environmental issues.</p>
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Engineering Economics	Human Rights	Manufacturing
<p>Discuss and solve problems related to the advanced topics such as interests, depreciation, depletion, income taxes, the effect of inflation, tools for evaluating alternatives, capital financing, replacement analysis and project risk and uncertainty</p> <p>theoretical</p> <p>environmental, ecological, and natural resource</p> <p>economics and includes a semester long development</p> <p>project that teaches students cost-benefit and financial</p> <p>analysis that includes environmental impacts and issues in</p> <p>the analysis.</p>	<p>Impact of environmental degradation and water</p> <p>resource depletion on communities, including poverty,</p> <p>environmental racism, and health as impacted by</p> <p>increasing population and climate change.</p>	<p>Includes materials for energy storage, photovoltaics, fuel cells, etc.</p>

اسم المقرر	كود المقرر	المستوى	عضو هيئة التدريس	الموضوعات المرتبطة بالإستدامة في المقرر	موضوعات إضافية يمكن ربط الإستدامة بها	طرق تقييم موضوعات الإستدامة (Report-Presentation-Mini Project-Community Project)
Digital Logic Fundamentals	EE 202	ثاني	ا.د.محمد عبدالرحمن	الاستدامة في مجال التعليم ، دمج ذوي الاحتياجات في فصول التعليم	التخلص من النفايات الرقمية بطرق تحافظ على البيئة	Mini Project
Introduction to Microprocessors	EE 203	ثالث	د.سناء عبدالدايم	/	Sustained in comp design(Green Computer)	Presentation
Electronics Workshop	EE 211	ثاني	د.سامي درويش	Filters/rectifiers Circuits	Using rectifiers and filters to increase efficiency	Final Project
Introduction to Electronic Circuits	EE 213	ثاني	د.سامي درويش	/	/	/
Micro-Electronic Devices and Circuits	EE 224	ثالث	د.سامي درويش	/	/	/
Solid State Electronics	EE 225	ثالث	د.إنجي النبال	Devices that run on low voltage direct current(LVDC)	Thermography helps detect energy losses in buildings	Report & Presentation
Signals and Systems	EE 241	ثالث	د.محمد عبدالكريم	-----	-----	-----
Electromagnetic Fields	EE 260	ثالث	د.ياسر الكمشوشي	.Conductors-Dialect .Capacities-magnetics martial	Magnetic force Inductance	Presentation
Electromagnetic Waves and Transmission Media	EE 261	ثالث	د.ياسر الكمشوشي	.Classification of media .impedance matching	Cavity resonates	Presentation
Energy Systems	EE 271	ثاني	ا.د.محمد الجمال	A way out for Sustainable Power resources	Studying the availability of using PV arrays in residential &	Presentation , Report & Community Project

	commercial areas					
/	/	/	د. سحر	ثالث	EE 290	Control Systems (1)
Report	/	استخدام مكونات كهربية موفرة. التخلص من النفايات بطرق آمنة.	إ. د. محمد عبدالرحمن	ثاني	EE 291	Electric Circuits
/	/	/	د. سحر عبدالمنعم	ثاني	EE 293	Electrical Measurements and Instrumentation (1)
Report	SCADA + Lamp Efficacy+	BMS + Solar Energy	إساتذة القسم	خامس	EE 400-1	Graduation Project (1)
			إساتذة القسم	خامس	EE 400-2	Graduation Project (2)
			د. هبة رافت	ثالث	EE 228	Analog Integrated Circuits
Presentation	Sustainable analog Communication System	Pre-emphasis & de-emphasis Technique	د. سناء عبدالدايم	ثالث	EE 251	Analog Communications
Community Project	Using efficient method to communicate TX & RX	Modulation technique	د. هبة رافت	ثالث	EE 252	Communications Laboratory
Presentation	Wireless energy harvesting	Channel modeling	د. محمد عبدالكريم	رابع	EE 255	Digital Communications (1)
Mini-projects	Smart environmental solutions	-----	د. محمد عبدالكريم	رابع	EE 256	Digital Communications (2)
/	/	/	د. سامي درويش	رابع	EE 262	Microwave Engineering.
/	/	/	د. محمد عبدالوهاب	رابع	EE 304	Microprocessor Based System Design
Presentation	Sustainable LTI Systems	/	د. سناء عبدالدايم	رابع	EE 342	Digital Signal Processing
Presentation	/	Design of Microwave Links	د. شوقي شعبان	خامس	EE 350	Communication Systems

Presentation	Mobile Phones health hazards , risks & dangers	Complete 2G System Design	د.شوقي شعبان	خامس	EE 354	Mobile Communication Systems
/	/	/	د.سامي درويش	رابع	EE 363	Microwave Measurements and Laboratory
تقارير أو ندوات أو مشروعات صغيرة	تحسين أداء الهوائيات لتحقيق متطلبات معينة	تطبيقات للهوائيات في أنظمة الاتصالات	ا.د.نور اسماعيل	رابع	EE 364	Antenna Theory and Design.
			ا.د.أحمد عبدالله	رابع	EE 385	Electrical Power and Machines.
-Presentation -Community Project (ATM Machines)	Sustainable Systems for Modulation	-Analog Modulation Techniques -Digital Modulation Techniques	د.سناء عبدالدايم	رابع	EE 254	Communication Technology for Power Engineers
			ا.د.عادل أبو العلا	ثالث	EE 272	Electrical Power Engineering (1)
Report	/	Sustainability	د.سحر عبدالمنعم	ثالث	EE 273	Electrical Power Engineering (2)
Presentation	/	Sustainability	د.سحر	رابع	EE 274	Electrical Safety Engineering
			د.ياسر الكمشوشي	رابع	EE 275	Power System Protection (1)
			ا.د.محمود الجمال	رابع	EE 276	High Voltage Engineering
Presentation	Machine Performance	High Efficient + M/C's	ا.د.محمد يسري	رابع	EE 282	Electrical Machines (1)
Presentation	Machine Performance	High Efficient + M/O's	ا.د.محمد يسري	رابع	EE 283	Electrical Machines (2)
Presentation	/		ا.د.عمرو الزواوي	ثالث	EE 286	Power Electronics (1)
			ا.د.عادل أبو العلا	رابع	EE 371	Power Systems Analysis
Presentation	Machine Performance	High Efficient + M/C's	ا.د.محمد يسري	خامس	EE 380	Electrical Machines (3)
Report & Mini Project	- Studying the introduction to the sustainable control systems.	- Design of state feedback controller - Design of observers - Case Study	ا.د.محمد حمدي	خامس	EE 390	Control Systems (2)

Report & Mini Project	- Case Study	- Digital PID controller - Digital controller design.	ا.د. محمد حمدي	خامس	EE391	
Lab experiment	.Digital inputs and outputs .State based design	.Boolean Algebra .flowchart Based design	د. ياسر الكمشوشي	خامس	EE389	PLC Applications in Industry
Mini Project Presentation	/	Image enhance	د. سناء عبدالدايم	خامس	EE345	Digital Image Processing
Presentation	/	Noise, signal detection, hearing & speech	د. نهى قرني	خامس	EE367	Fundamentals of Acoustic

Department of construction

Code	Title	Added topics	Target sustainable goal
ES 101	Engineering Materials	The efficient use of natural resources	Goal 12: Ensure sustainable consumption and production patterns
ES 102	Structure Analysis (1)		
ES 103	Introduction to CAD Systems		
ES 104	Surveying for Engineers		
ES 105	Introduction to Construction Engineering		
ES 106	Civil Engineering Drawing		
ES 107	Structural Analysis (2)		
ES 108	Strength of Materials		
ES 201	Introduction to Environmental Engineering	Improve awareness-raising on climate change mitigation	Goal 13: Take urgent action to combat climate change and its impacts
ES 202	Concrete Materials	The efficient use of natural resources	Goal 12: Ensure sustainable consumption and production patterns
ES 203	Construction Project Management		
ES 204	Soil Mechanics (1)		
ES 205	Building Technology	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors	Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
ES 206	Reinforced Concrete		

	Design (1)		
ES 207	Construction Planning and Scheduling	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors	Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
ES 208	Hydraulics		
ES 209	Structural Analysis (3)		
ES 210	Introduction to Electrical and Mechanical Systems	Double the global rate of improvement in energy efficiency	Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
ES 301	Steel Structures Design (1)		
ES 302	Reinforced Concrete Design (2)		
ES 303	Project Cost Analysis	Global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation.	Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
ES 304	Hydraulic Structures		
ES 310	Transportation and Traffic Engineering	Provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons	Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

ES 311	Advanced Topics in Materials	The efficient use of natural resources	Goal 12: Ensure sustainable consumption and production patterns
ES 315	Surveying (2)		
ES 305	Steel Structures Design (2)		
ES 306	Highway Engineering		
ES 307	Construction Productivity	Double the global rate of improvement in energy efficiency	Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
ES 308	Computer Aided Design		
ES 309	Foundation Engineering	Expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries	Goal 7: Affordable and Clean Energy
ES 312	Reinforced Concrete Industrial Structures		
ES 313	Construction Risk Management		
ES 314	Open Channel Hydraulics		
ES 401	Water and Waste Water Engineering	<p>Implement integrated water resources management at all levels</p> <p>Achieve access to adequate and equitable sanitation and hygiene for all</p>	<p>Goal 6:</p> <p>Ensure availability and sustainable management of water and sanitation for all</p>

		Substantially reduce waste generation through prevention, reduction, recycling and reuse	Goal 12: Ensure sustainable consumption and production patterns
ES 402	Harbor and Marine Constructions	<p>Provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons</p> <p>Sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans</p>	<p>Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable</p> <p>Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development</p>
ES 407	Design of Steel Bridges		
ES 408	Reinforced Concrete High Rise Building		
ES 403	Repair and Maintenance of Buildings		
ES 404	Construction Methods Equipment	Double the global rate of improvement in energy efficiency	Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all
ES 405	Construction Contracting		
ES 406	Quality Control of Construction Materials	Double the global rate of improvement in energy efficiency	Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all

ES 409	Pre-stressed Concrete		
ES 410	Design of Reinforced Concrete Bridges		
ES 411	Soil Mechanics (2)	Develop quality, reliable, sustainable and resilient infrastructure	Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
ES 412	Design of Temporary Structures		

Department of Mass media

Course Code	Course Title	SDG
COM (103) N	Communication and Development	Goal 4.
COM (200) N	Public Opinion and its' methods of measurements	Goal 10.
COM (201) N	Theory and Process of Communication	Goal 11.
COM (202) N	Introduction to Mass Communication Research	Goal 11.
COM (300) N	Media Law& Ethics	Goal 10.
COM (305) N	Media and global awareness	Goal 10. Goal 11. Goal 17.
(300) N	Laboratory	Goal 4. Goal 10. Goal 11. Goal 12. Goal 13. Goal 16. Goal 17.
COM (403) N	Media literacy	Goal 10. Goal 11. Goal 16.

COM (405) N	Environmental communication	Goal 12. Goal 13.
COM (406) N	Political communication	Goal 4. Goal 16. Goal 17.
(401) N	Graduation project	Goal 4. Goal 10. Goal 11. Goal 12. Goal 13. Goal 16. Goal 17.

Infuse the sustainability concepts in

- PL 206 Biochemistry I
- PHR 375 Biochemistry II
- PHR 585 Molecular Therapeutics
- مقرر البيئة والمجتمع

Environment and Society Course (GEN108)

Microbiology and immunology Department
Environment and Society (GEN 108)

Assignment Announcement

This assignment will be done in groups of **5 students** (according to the [topic distribution next page](#)).

The **deadline** for submission of this assignment is **Tuesday and Wednesday 23 and 24 April 2019**.

No excuses will be accepted for late submissions, whatever the circumstances.

Each group should submit the **following items**:

	Content	Total=20 marks
PowerPoint presentaion	PowerPoint presentation (not more than 15 slides) containing: 1- Updated information about the topic 2- Ideas on how to apply the topic in PUA campus and in the students' lifestyle 3- References (at least 3)	10 marks
Brochure	Brochure (size A4) divided into 2 or 3 sides, should contain: 1- illustrated Creative ideas to apply in PUA campus 2- illustrated Creative ideas to apply in your lifestyle 3- The carbon footprint of each student in the group.	10 marks

Marks distribution:

> **Concerning the PowerPoint presentaion:**

It should contain **up to date summarized information** with at least **3 references**.

Rubrics	Total =10 marks
Material and Information [up to date]	8 marks
References (at least 3 ref.)	2 marks

> **Concerning the brochure:**

The Brochure should be done on **A4 paper** (divided into 2 or 3 parts) should contain **illustrated Creative IDEAS**. On how to apply the topic in your lifestyle and in PUA campus.

Rubrics	Total = 10 marks
Creative ideas to apply in PUA campus	3 marks
Creative ideas to apply in your lifestyle	3 marks
Carbon footprint of each student	2 marks
Display	2 marks

Topic	Student ID
Waste recycling and separation at source	Students whose ID starts with 5111, 5112, 5113, 5114 and 5115001-5115191
Water conservation	Students with ID 5115196 – to the end of 5115 and 5116001 – 5116159
Energy conservation and green energy	Students with ID 5116163 – to the end of 5116

Course Coordinator: Dr. Amira Gaber

Faculty of Physical therapy

إقيراح إدخال مفهوم أهداف التنمية المستدامة فى كل المناهج لمقابلة المساهمة فى تحقيق الأهداف 1 (مجابهة الفقر) و 3 (الصحة) و4 (جودة التعليم) من أهداف التنمية المستدامة.

Faculty of dentistry

S.	Sustainability Topic to be addressed in curricula	Course name (current curricula	Course Code
1	Climate change	Botany	BOT122
2	Pollution	Botany	BOT122
3	Footprint	Botany	BOT122
4	Limitation of resources and poverty	Botany	BOT122
5	Natural alternatives for cost reduction (Graduation Researches)	Endodontics 5 Restorative Dentistry 6 Fixed Prosthodontics 6 Removable Prosthodontics 6 Periodontology 4	RDE 552 RD 562 FPR 562 RPR 562 PI 542
6	Poverty challenges (CCC)	Endodontics 5 Restorative Dentistry 6 Fixed Prosthodontics 6 Removable Prosthodontics 6 Periodontology 4	RDE 552 RD 562 FPR 562 RPR 562 PI 542
7	Poverty challenges (Medical convoys)	Community Dentistry 1 Community Dentistry 2	PDCD 531 PDCD 542

S.	Topic	Course name	Course Code
8	Technology	Computer Skills & Programming Concepts Computer Skills & Programming Concepts	UEC 01 UEC 02
9	Preventive dentistry	Community Dentistry 1 Community Dentistry 2	PDCD 531 PDCD 542
10	Reduction of infection rate	Dental Clinic Management & Infection Control	CD 312
11	Globalization	Principles Of Law, Human Rights & Ethics	GEN 211
12	Gender equality	Principles Of Law, Human Rights & Ethics	GEN 211

S.	Topic	Course name	Course Code
13	Culture equality	Principles Of Law, Human Rights & Ethics	GEN 211
14	Democracy for a better society	Principles Of Law, Human Rights & Ethics	GEN 211
15	Hazard of chemicals	Dental Biomaterial 1 Dental Biomaterial 2	RDM 211 RDM 222
16	Stewardship of drugs	Pharmacology 2 Local Anaesthesia & Pain Control	PHM 322 OS 411
17	Terminology of sustainability	English 1 English 2 English 3	UGE 01 UGE 02 UGE 03
18	Terminology of sustainability	Arabic Language Skills	UGA 03

● **دمج مفاهيم التنمية المستدامة بالمناهج في التعديلات القادمة
صيف 2019 بالطرق الآتية**

- استراتيجية الدمج أو التكامل
- استراتيجية المقررات المستقلة
- استراتيجية المشاريع التربوية
- واعتماد طرق التدريس القائمة على العمل وممارسة الأنشطة
- تدريب أعضاء هيئة التدريس على مهارات تبسيط العلوم
- الربط بين التعليم وتنمية المجتمع المحلي والدولي

Faculty of Languages and Translation:

1. For the academic year of 2019- 2020 we have several proposals:
2. **Spanish-language graduation projects working on and applying Sustainability in all its branches and fields.**
3. **Translating books about Sustainability from Spanish to Arabic through existing courses in the current internal regulations of the department such as:**
4. ES 505 Economic translation from/into Arabic
5. ES 702 Scientific translation from/into Arabic
 - Workshops with activities to introduce and apply Sustainability:
6. **Seminars about Sustainability dealing with three main axes: community behavior, public awareness and general culture through three basic steps:**
7. A – Introducing Human Rights to the students in order to have a decent life in a clean environment, having renewable and sustainable energy resources.
8. B - Working on developing the student awareness of Sustainability and how to apply it.
9. C- Familiarizing the student with the Sustainability culture in all fields in order to preserve the natural resources of life.
10. Introducing a new course entitled “Introduction to Sustainability” (3 credit hours, two hours lecture and one hour practical) that deals with Sustainability, its goals and plans for example: the need to work on it because of its impact on life on the planet, The most important cities based on Sustainability and the quality of education using modern technology.
11. 5- Writing articles in Spanish about Sustainability through the existing courses in the Spanish Department Regulation:
12. ES 401 Essay & Reading II
13. ES 602 Essay & Reading III

Faculty of Tourism

	Action	Courses involved
	1- Increasing the number of courses/content that engages sustainability issues.	<p><u>Completely related courses:</u></p> <ul style="list-style-type: none"> • Tourism and the Environment • Tourism Impact and Sustainability <ul style="list-style-type: none"> • Ecotourism • Theme Park Management • Social Aspects in Tourism and Hospitality • Tourism Attractions Planning and Development • International Tourism Planning and Development <ul style="list-style-type: none"> • Resort Planning and Development <p><u>Partly related courses:</u></p> <ul style="list-style-type: none"> • Basic Accounting • Convention and Meeting Planning <ul style="list-style-type: none"> • Introduction to Economics • Tourism Project (1) and (2) • Travel Agency and Front Desk Management • Airline Reservation System and Ticketing <ul style="list-style-type: none"> • Geography of Tourism • Food and Beverage Management <ul style="list-style-type: none"> • Food Selection

Action	Field projects involved
<p>2- Intensifying the initiative and effort to solve problems related to local and international sustainability issues through the field project of the courses.</p>	<ul style="list-style-type: none"> • Applying the Blue Flag standards on the beaches of Alexandria, for more sustainable beaches. <ul style="list-style-type: none"> • Preparing the file of placing the site of Kom el Shoqafa and Pompey's Pillar on the UNESCO World Heritage List (WHL). • Documenting tourism and hospitality professional terms to be available for the practitioners and maintain it from disappearing. • Professional video and magazine for the documentation of the protected areas and ecotourism sites in Egypt. • Food safety project at the University of Pharos for the application of sustainability principles in the food industry. <ul style="list-style-type: none"> • The adoption of the principles of tourism for all (Accessible Tourism) in the area of Kom el Shoqafa in Alexandria, for the sake of the people with special needs. <ul style="list-style-type: none"> • Applying sustainable accounting concept in the hotel establishments. • Development of Al Max area for the application of identity preservation concept.

Action	Curriculum involved
3- Inaugurating new programs serving the concept and principles of sustainability.	<ul style="list-style-type: none"> The faculty has opened two new programs, including the program “Cultural Heritage Management”, where the subject of management of heritage sites and environmental guidance has become very important, especially since the management plans for World Heritage Sites have become a prerequisite for the inclusion of cultural property on the World Heritage List to ensure its sustainability and preservation. Add that the role of cultural heritage in the sustainable development of communities is essential environmentally, socially and economically.
Action	Parties involved
4- Promoting the collaboration in teaching sustainability among faculty staff and departments.	All faculty staff are involved.