



جامعة فاروس بالإسكندرية  
Pharos University in Alexandria

“Sustainability Transformations In Education  
“Education for Sustainable Development”

**2019-2020 (PHASE 3)**

By

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**THE GLOBAL GOALS**  
For Sustainable Development

*Responding to The Global  
Goals of Sustainable*

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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 SDGs, 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.

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## 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).
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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

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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

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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)

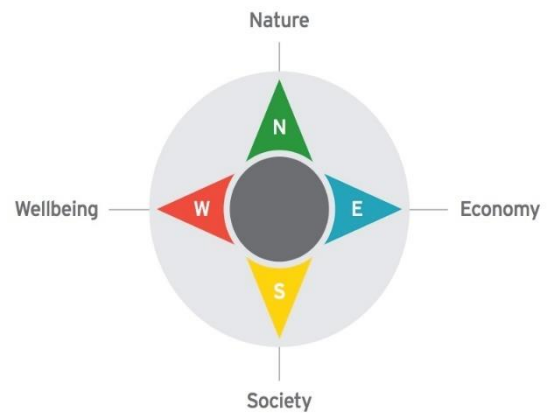
Sustainability Compass as a framework and as a tool provides a general overview, a methodological introduction, and stakeholder process guidance. It has been adopted for many uses including a classroom teaching and curriculum planning tool for educators. The Sustainability Compass, both as a symbol and 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.

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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:

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**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.



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## 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.

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## 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](http://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).

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## Part 2. Project Results : Infusing sustainability in curricula

### Phase 1. Awareness phase (summary)

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 (Summary)

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.

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.

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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

Appendix 2 shows the results of the exercise taken on each Faculty. For more details refer to the full report on <https://www.pua.edu.eg/sustainability-transformations/sustainability-transformations-in-education/>

The general recommendations of phase two at each level are:

#### **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

### **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 implementation in the curricula in each Faculty of the University as well as small case projects in the different faculties of Pharos University. The following are the result of this phase, where almost all faculties of the university has infused sustainability in its curricula at different levels. The table below demonstrates the results of this phase. The table shows for each faculty the name of the course addressing each particular SDG, and course code, and the topic in such course. Some courses are relevant to more than one SDG.

	Faculty in Pharos University	Course name	Course code	SDG of relevance	Topics in each course
1	Applied Health Sciences Technology	Development and Regulation of Medical Products	MGDR-101	12	Responsible consumption and production methods
2	Applied Health Sciences Technology	Environmental Health	MGEH-101	6	Hygiene for Clean water and sanitation
3	Applied Health Sciences Technology	Psychology	MGSY-201	3	Mental well being
4	Applied Health Sciences Technology	Infection Control	MLIC-401	3	Hygiene for good health
5	Applied Health Sciences Technology	Ethical and Legal Issues in Health Fields	MGME-101	3, 12	Wellbeing and living standards
6	Applied Health Sciences Technology	Scientific Thinking	MGST-201	17	Sustainability and connections
7	Applied Health Sciences Technology	Lab Management	MLLM-101	8	Green procedures and procurements
1	Pharmacy	Medicinal Chemistry I	(PCD 301) and (PCC 401)	3	diagnostic agents that treat different infections
2	Pharmacy	Environment and sustainability	PMC E01	12.13.15	Sustainable ecosystem services
3	Pharmacy	Phytotherapy	PG 305	13,15	Sustainable industry of Natural products
4	Pharmacy	Public Health and Preventive Medicine	PMC 401	3	Society health and wellbeing

5	Pharmacy	Project in Pharmacognosy & Natural Products	PG E08	3,12, 9	Sustainable use of natural resources
6	Pharmacy	Nutrition & Health	PL 416	3, 2	Combating malnutrition , Society health and wellbeing
7	Pharmacy	Pharmacotherapeutics for Special Population	PL E23	10	Wellbeing of special needs population
8	Pharmacy	Public Health	PM 305	3	Society health and wellbeing
9	Pharmacy	Home Health Care	PN E19	3, 10	Wellbeing of women health at home to reduce inequalities
10	Pharmacy	Good Manufacturing Practices	PPC E02	12, 9	Responsible production consumption techniques in pharmaceutical industry
11	Pharmacy	First Aid and Basic Life Support (BLS)	PLC 303	3	Society health and wellbeing
12	Pharmacy	Natural Cosmetics	PGD E01	3,12	Sustainable use of natural resources
13	Pharmacy	Herbal medicine	PGD E02	3.12	Sustainable use of natural resources
14	Pharmacy	Sustainability in Therapeutics	PLD E03	3,12	Sustainable use of natural resources
15	Pharmacy	Medicinal Chemistry II	(PCD 302) and (PCC 403)	3	pharmacological aspects of medicinal and pharmaceutical agents that belong to different categories
16	Pharmacy	Drug Design	(PCD 401) and (PCC E02)	3	Essentials of pharmaceutical chemistry and metabolism. Development of prodrugs, soft drugs, hard drugs
17	Pharmacy	Analysis of food & flavours	(PCD E02) and (PCC E03)	3	classification of flavoring agents and chemesthetic compounds found in food, their chemistry and methods of analysis.
18	Pharmacy	Instrumental Analysis	(PCD 203)	6	methods of water purification, the detection of impurities
1	Artificial Intelligence	Bioinformatics Programming and Scripting	DS307	3	Medical data handing
2	Artificial Intelligence	Biomedical Imaging	DS407	3	Medical data handing
3	Artificial Intelligence	Speech Recognition	AI402	10	Education for special needs to reduce inequalities

4	Artificial Intelligence	Language Processing	AI407	10	Education for special needs to reduce inequalities
1	Tourism	Ethics and Human Rights	GEN 103	16	Well being and living standards
2	Tourism	Consumer Behavior in Tourism and Hospitality (Elective)	THM 162	12	Responsible consumption and production methods
3	Tourism	Legal Issues in Tourism and Hospitality	THM 245	16	Tourism sustainability and legalities
4	Tourism	Human Resource Management	THM 261	8	Economic growth and enterprises
5	Tourism	Industry Internship (1), (2), (3) and (4)	HM 391, HM 392, HM 493, and HM 494	8, 17	Economic growth and partnership with tourism companies
6	Tourism	Current issues in food service (Elective)	HM 336	3, 12	Healthy food for wellbeing, consumption reduction
7	Tourism	Safe Food Service Management	HM 434	3,12	Healthy food for wellbeing, consumption reduction
8	Tourism	Entrepreneurship in Hospitality Industry (Elective)		9.17	Economic growth and partnership with tourism companies
9	Tourism	Ecotourism	TM 371	15	Protection of wildlife
10	Tourism	Tourism Transportation	TM 312	13	Co2 and emission reduction
11	Tourism	Tourism Impact and Sustainability	TM 354	15	Conservation and protected areas management
1	Dentistry	Dental clinic management & infection control	CD 312	3,	Human health protection and control of infection in dental clinics
1	Physical Therapy	Handicapped Sociology	PTBA 104	10	Psychic changes and social inclusion
2	Physical Therapy	Public Health	PTBA 216	1, 3.10	Good health of society particularly for poor
3	Physical Therapy	Psychology of Handicapped	PTBA 217	3, 10	Psychic problem and treatment
4	Physical Therapy	Clinical Psychology	PTBA 337	3	Treatment sessions of Psychic patients
5	Physical Therapy	Woman Health Physical Therapy	PTWH 446	3,5,	Women health and treatment
6	Physical Therapy	Nutrition	PTBA 570	1,2	Health food for balanced nutrition
7	Arts and design	Perception of the Visual Environment	G331	15	Effect of nature on art and artists
1	Mass communication	Electronic marketing	PRAD (205)	8	Introducing the concept of e-marketing, market definition and division , marketing

					environment, and how to identify and study consumer behavior
2	Mass communication	Propaganda and psychological war	COM (405)		examples of propaganda which was held during the various wars and conflicts
1	Law	Property and Real Rights Law	LV 07	16	Justice concepts and human rights
2	Law	Labor and social security law	LV 06	16,10	Social security issues and reduces inequalities
1	Engineering	water and wastewater	ES 401	6	The course introduces an overview of Water Supply Introduction and Definitions, important Fields of Environmental Engineering, Environmental system, Waste cycles
1	Engineering	Energy Systems	EE 271	7,12	Studying the availability of using PV arrays in residential & commercial areas
2	Engineering	Material science	EP 217	12	This course introduces the students to Classification of engineering materials, atomic and molecular structure. The course focuses on polymer properties and modification for special applications.
3	Engineering	Introduction to environmental engineering	EP 389	12, 13	The course introduces engineering aspect with complete environmental assessments of the impacts
4	Engineering	Pollution control in petrochemical industries	EP 392	13	The course focuses on emissions form petrochemical industries and sustainable control mechanisms
6	Engineering	Water treatment	EP 328	6	This course introduces the students to Water chemical analysis, water treatment for different uses, Equipment design calculations
7	Engineering	Energy conservation	EP 330	7	Different methods of energy conservation: electrical energy conservation, lightening, energy saving, heat energy saving, insulation, reusing of hot waste water



8	Engineering	Renewable energy and storage systems	EM 333	7, 11	Different methods of energy storage systems, : electrical energy lightening, energy saving, heat energy saving, insulation, solar energy, smart building, equipment design, sensors and computer-controlled processes.
1	Business	Islamic finance and sustainability	BF858	16	The course describes the sustainability of Financing rules in Islam.
2	Business	International Economics	BF 636	8	The course focuses on international economic relations and its sustainability
3	Business	Corporate Finance	BF533	8	The course introduces the sustainable finance systems in corporates for entrepreneurs.
4	Business	Business and society	BF 747	10	The course discussed the relationship between business and society in terms of achieving equality through Social corporate responsibility
5	Business	Consumer behavior	BF 746	12	The course focuses on issues related to the behavior of consumption and production and means to rationalize consumption
6	Business	Entrepreneurship	BT 637	8	Think tank and incubators

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## Part 3. Conclusions and General Recommendations

In this project, Pharos university went through a unique process of infusing the concepts of sustainable development into its education programs. The project examined the links between educational programs of the undergraduate level and SDGs, as reflected in curricula of different faculties at the University. The focus was on the way such curricula could be developed, as a whole, to identify specific conceptual (causal) links among educational programs and SDG areas; the constraints and challenges that they emphasize in the application Phase. The exercise undertaken in this project shows that the university curricula had multiple areas of sustainable development already, and this project has developed these curricula and enhanced its impact to capture a rich network of linkages between its main topics and SDG areas.

The project results in infusing sustainability concepts in 10 faculties, with a total of 66 courses in the curricula of about 36 University program. These 66 courses account for about which accounts for about 25 % of the total courses.

While some connections might seem intuitive and obvious, others are not. Indeed, this project shows that no single faculty has considered all the potentially relevant links to SDGs in its curricula, so comprehensive overview is essential to be obtained to overview the status Quo in each faculty and the analytical ways to develop it that is related directly to its mandates, and strategic plan. By doing this an aggregate picture on the university that is much more complete will be developed. In spite of this comprehensiveness, several gaps were identified in terms of links that are not well covered by some faculties. Those include links between the curricula and poverty, water, urbanization, terrestrial ecosystems, climate action and oceans. This calls for a more educational programs and scientific research covering those links. Doing so would be an important undertaking going forward, as it would allow for a full assessment of Pharos University interface on education and research. Yet, it can be concluded that this project provided systematic analysis that can provide an initial basis for an integrated analysis of policy priorities for education in the context of the SDGs.

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## Appendix 1. Content of Awareness workshops

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

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

## Appendix 2. Focal Team representing Faculties of the university and summary results of Phase 2

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 Studies 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	Languages and Translation
32	Mohamed Farid	Lecturer	
33	Omneya Ahmed Mahmoud Salem	Lecturer	
34	Nancy Ramez Bedwani	Lecturer	Dentistry
35	Walid Ahmed Lotfy	Lecturer	
36	Sherif Saeed Darwish	Lecturer	
37	Sara Saeed	Lecturer	
38	Sahar Abdelmonem Moussa	Lecturer	Engineering
39	Sanaa Abdeldayem	Lecturer	
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	

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.

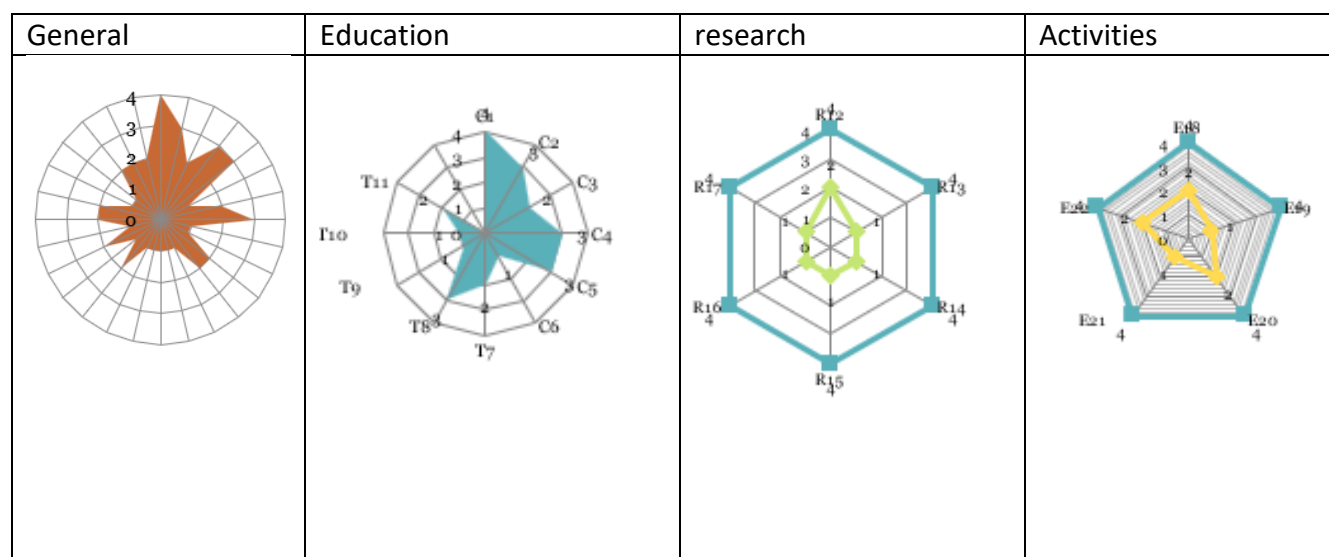
The results of such analysis in each faculty are represented below for each faculty, arranged by alphabetical order:

## 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:**

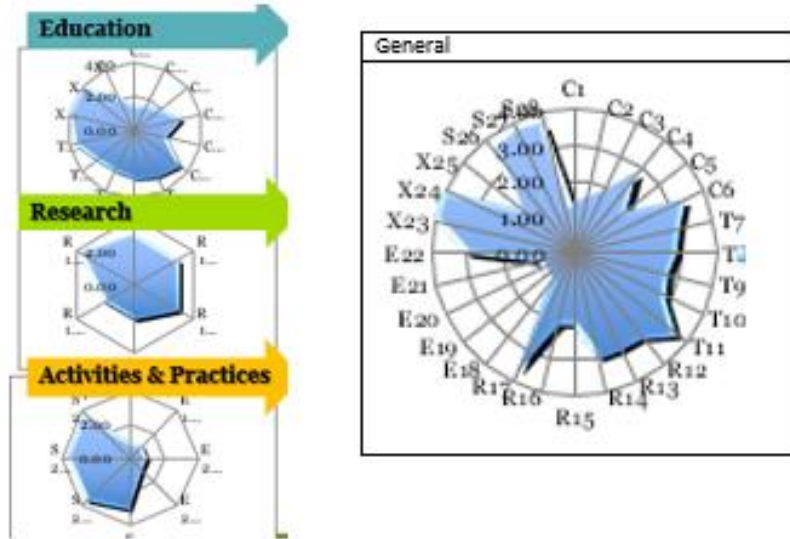
- the department offer courses that engage sustainability concerns more than we expected
- we need to be better at reinforcing expertise of staff members in the area of sustainability
- there are opportunities to expand our teaching and research in the area of sustainability



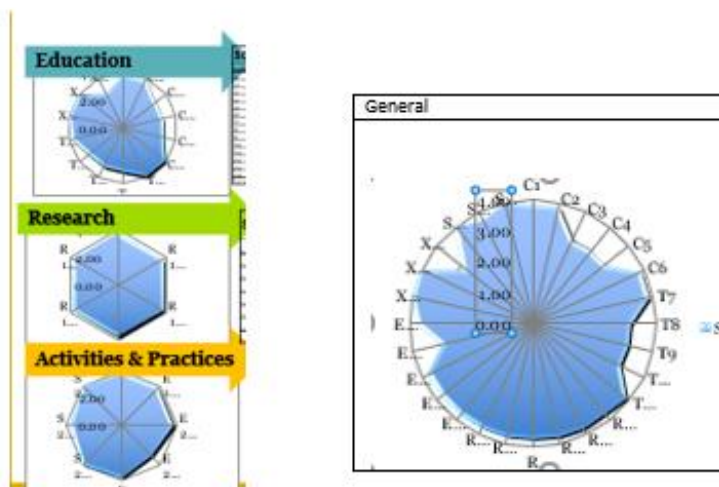
## 2. Faculty of Arts and Design

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

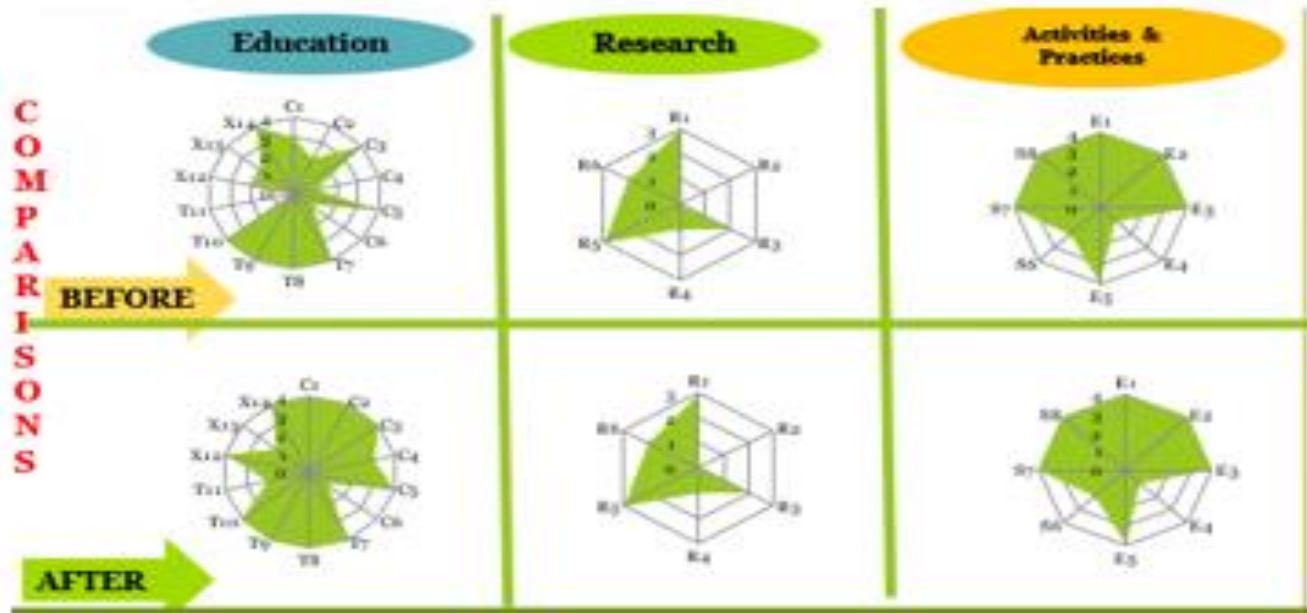
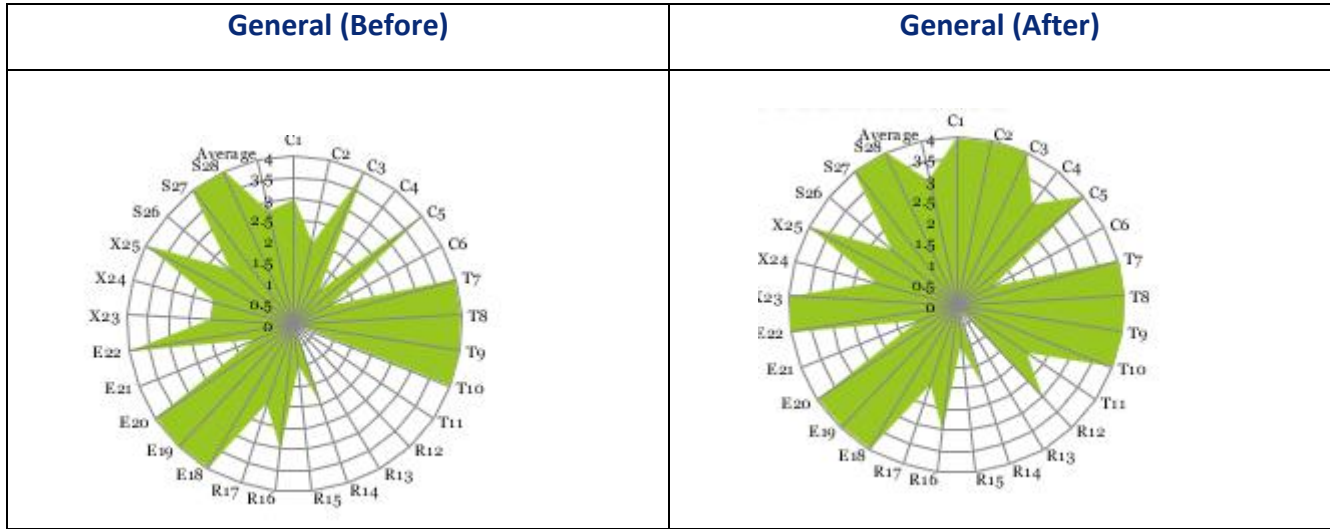
Before and after curriculum development



Foreseen results for 2020-2022



### 3. Faculty of Dentistry

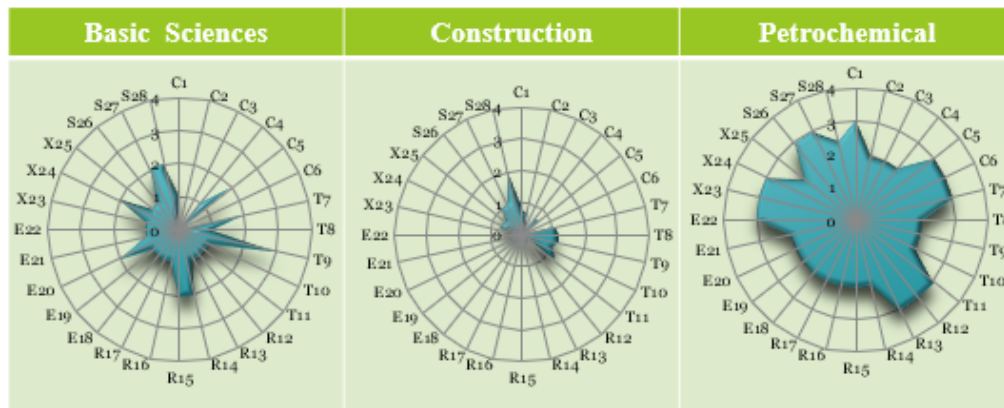


## 4. Faculty of Engineering

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

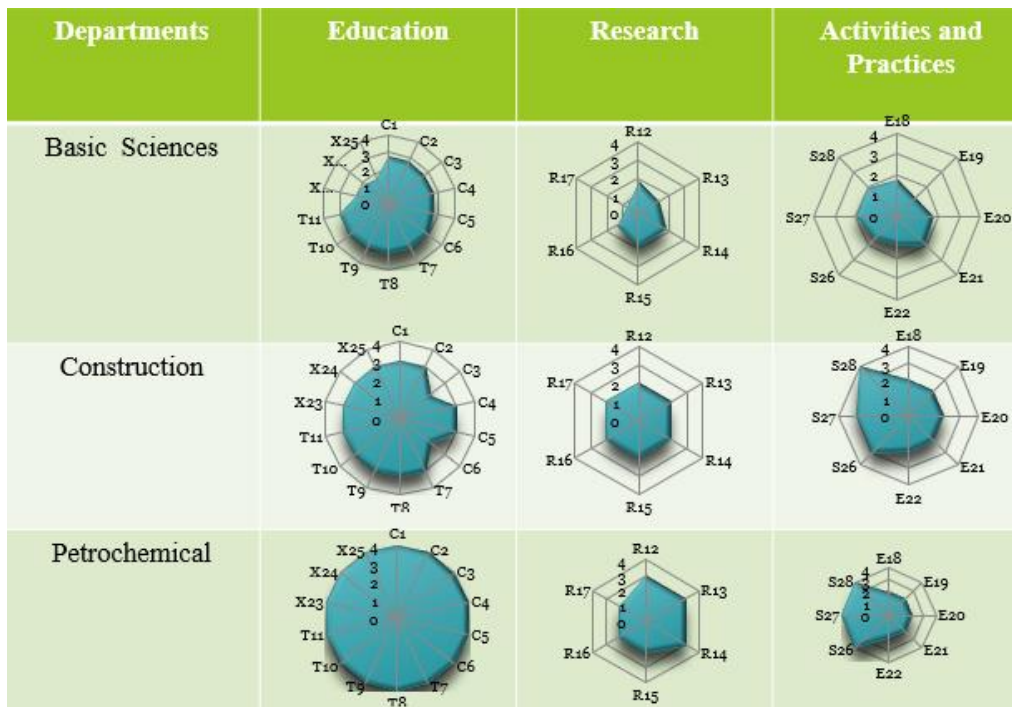
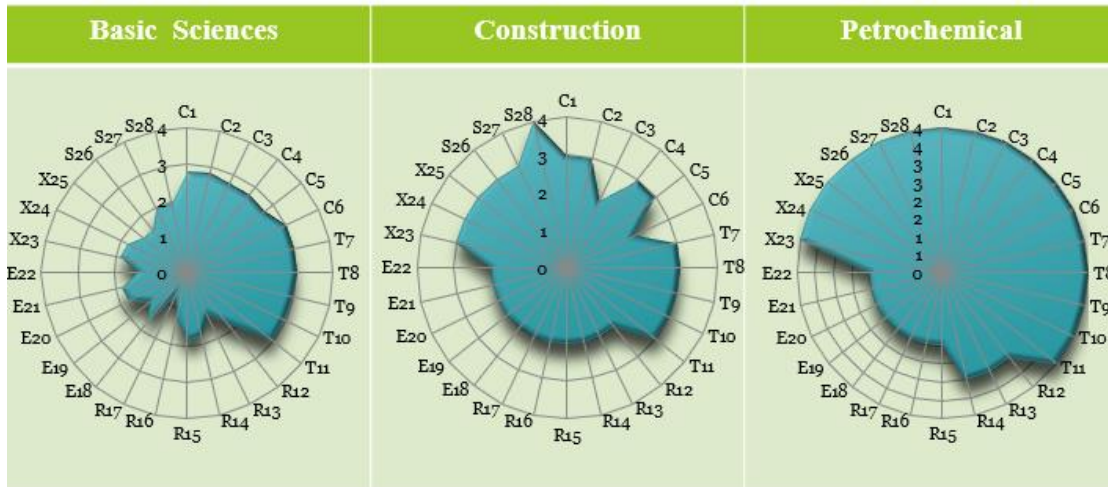


A plan of using

Department	Education	Research	Activities and Practices
Basic Sciences			
Construction			
Petrochemical			

Proposed action

sustainable development goals as indicators for improvement of the current situation. The results anticipated are:



## 5. Faculty of Languages and Translation

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.

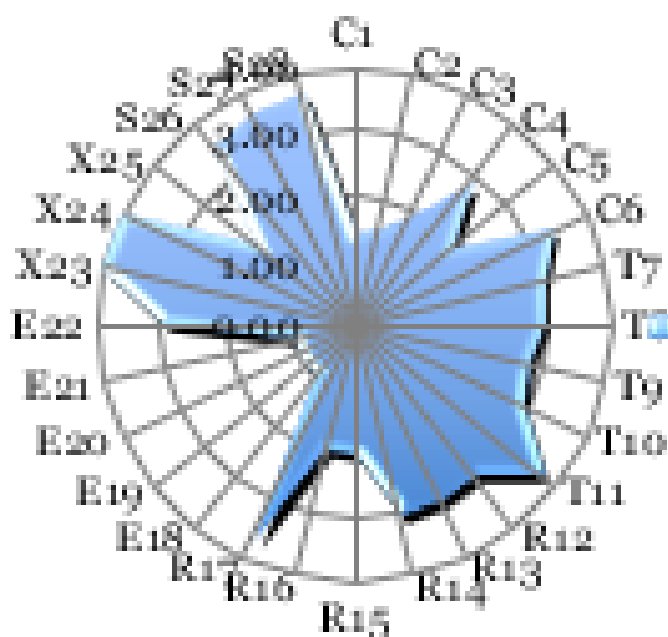
Goal 9: Industry, Innovation and Infrastructures: Sustainability in public transports and construction of roads and bridges.

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.

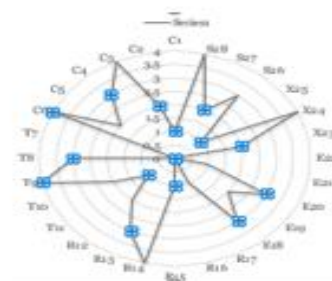
Goal 8: Decent work and Economic Growth: The students made a list of the documentary films about Economic Spanish Growth.



## 6. Faculty of Mass Communication

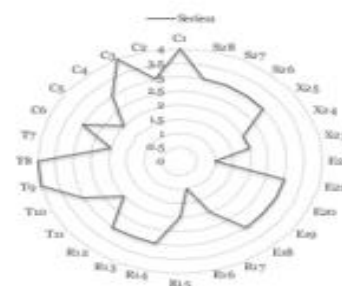
Current situation:

Course Code	Course Title	Credit Hours	Theoretical	Practical	Level
COM (103) N	Communication and Development	3	3	-	1st
COM (100) N	Public Opinion and its' methods of measurements	3	2	1	2nd
COM (101) N	Theory and Process of Communication	3	2	1	2nd
COM (102) N	Introduction to Mass Communication Research	3	2	1	2nd
COM (300) N	Media Law & Ethics	3	2	1	3rd
COM (301) N	Media and global awareness	3	3	-	3rd
(300) N	Laboratory	3	-	6	3rd
COM (402) N	Media literacy	3	2	1	4th
COM (403) N	Environmental communication	3	2	1	4th
COM (406) N	Political communication	3	2	1	4th
(404) N	Graduation project	6	-	12	4th



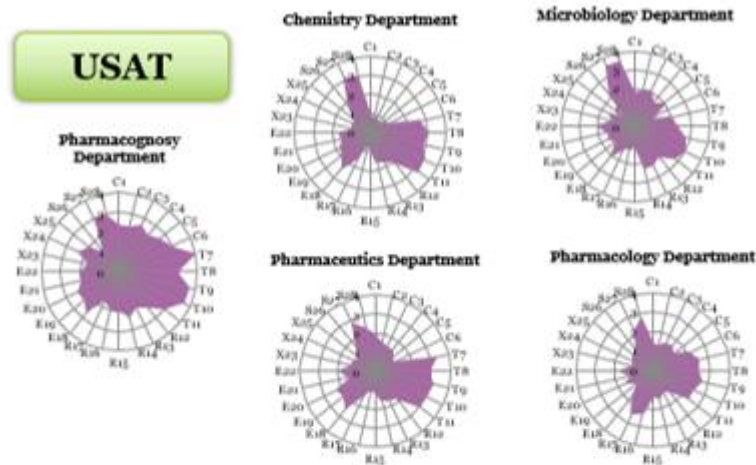
### Targeted Goals

Goal	SDG
Goal 4.	Ensure inclusive and equitable <b>quality education</b> and promote lifelong learning opportunities for all
Goal 10.	<b>Reduce inequality</b> within and among countries
Goal 11.	Make cities and human <b>settlements inclusive, safe</b> , resilient and sustainable
Goal 12.	Ensure <b>sustainable consumption</b> and production patterns
Goal 13.	Take urgent action to combat <b>climate change</b> and its impacts
Goal 16.	Promote <b>peaceful and inclusive societies</b> 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 <b>Global Partnership</b> for Sustainable Development



## 7. Faculty of Pharmacy and Drug Manufacturing

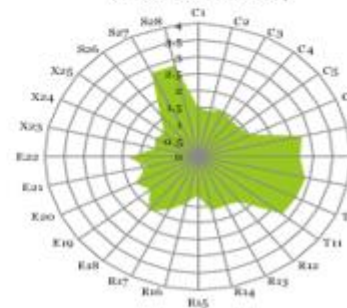
Evaluation of the current situation



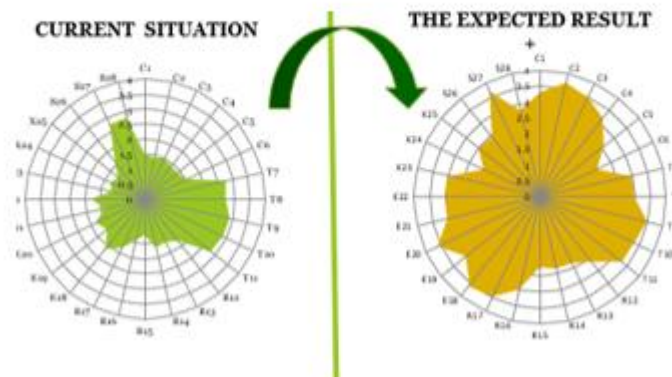
A general pattern was observed showing:

- ✓ An evident knowledge and welling 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

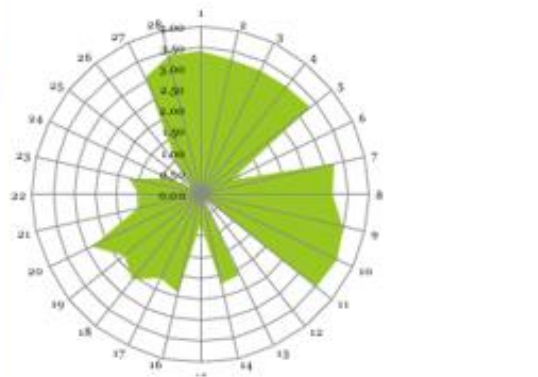
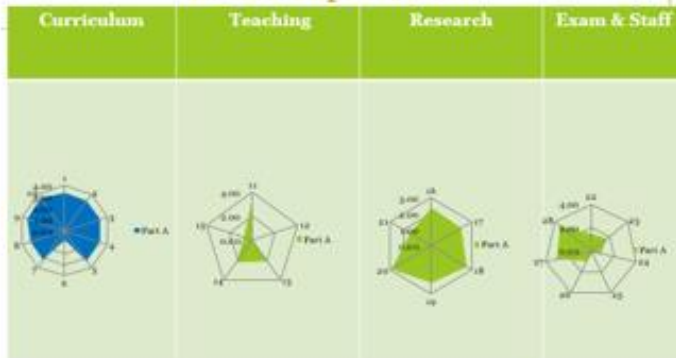


Future Plans: Next semester, an integrated Graduation project related to the "Sustainability in Pharmaceutical Care" will be coordinated between all the faculty departments.



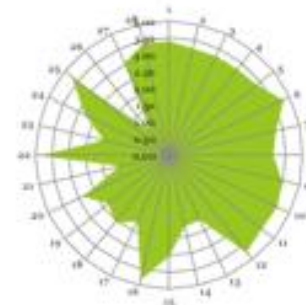
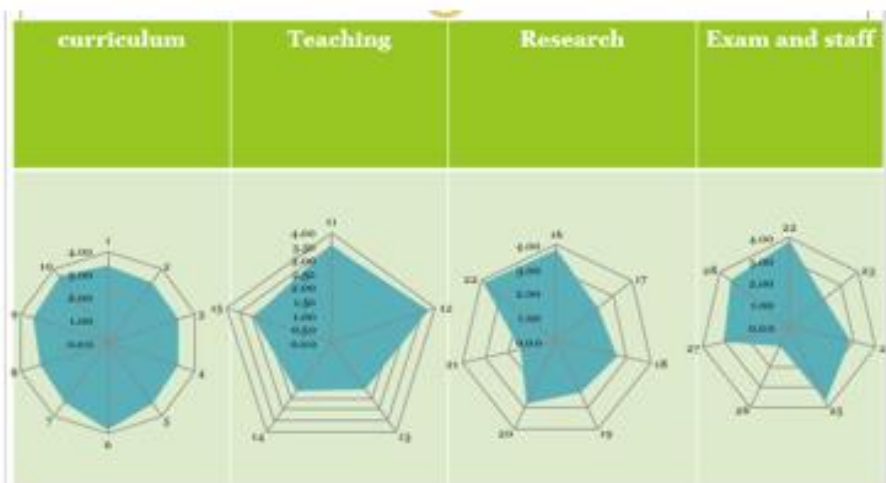
## 8. Faculty of Physical Therapy

### Before improvement



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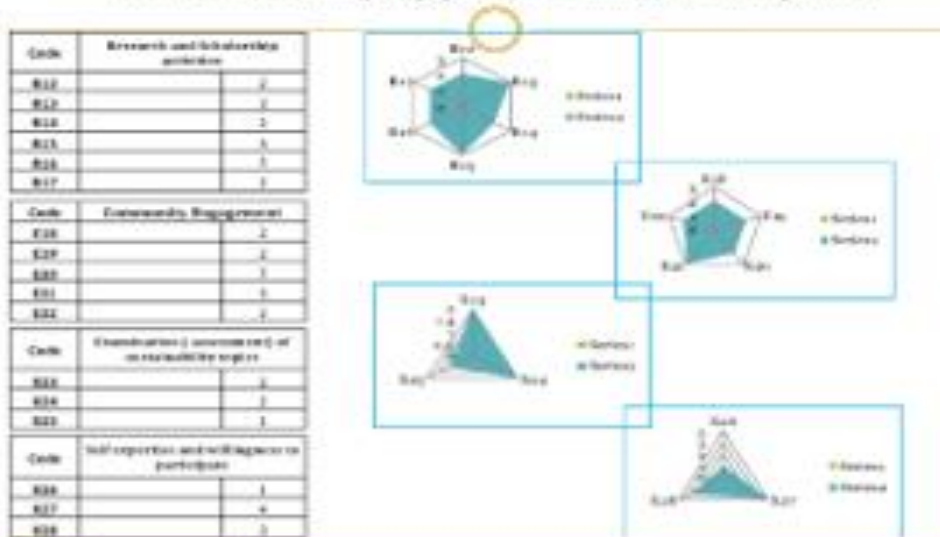
### After Improvement



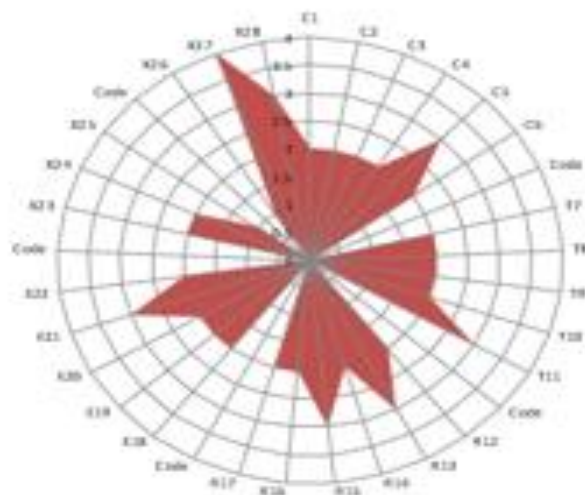


# 9. Faculty of Tourism and Hotel Management

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



### General Condition



General Condition

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

