

Date: 1 Sep. 20

To: Dr. Ahmed Yamani
Rector

Subject: Programs and Courses with SDG's Elements for College of
Engineering and Architecture and Design

Dear Dr. Ahmed Yamani,

With regards to courses that supported SDG's goals, the college of engineering have already started long time ago to incorporate elements of sustainability in its courses. In addition to having sustainability as one research theme across all research team in the college. The College developed two courses dedicated to SDG's. One course titled, "Sustainable Development: Principles, Methodologies, and Practices" and the second course id "Leed Lab". Attached list of courses hat incorporate sustainability and research publications that focuses on sustainable elements

This is for your kind information

Sincerely,



Dr. Abdulhakim Almajid
Dean, College of Engineering
Acting dean, College of Architecture and Design

1. The courses that focuses on Sustainability are:

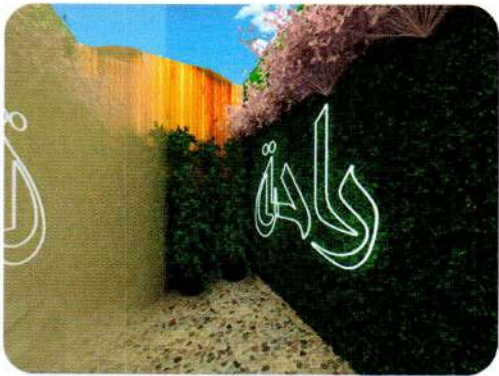
No.	Course	Instructor	Information	Evidence	SDG/s
1	EM 206	Dr. Muneer	Materials Science: Significant developments are being currently made to improve the sustainability of existing engineering materials and developing new materials with improved performance ability be it automobile or aerospace industries.	Course Specification, Ch. 7	17
2	EM 408	Dr. Hassan Dr. Tamer	General Engineering Design: Design for Production, Use and Sustainability Design for Environment	Chapter 14 Course Specification, Lecture	8
3	EM 428	Dr. Ihab	Sustainable Development Principles, Methodologies, and Practices	Course Folder	1-17
4	EM 458	Dr. Tamer	Life Cycle Assessment	Lecture	7
5	EM 473	Dr. Ali	Energy Management	Course Syllabus	7
6	EM 457	Dr. Abdelhadi	Lean Manufacturing: several topics covered are SDG related, such as JIT were students are taught to make whatever we need at the time we need it in the amount needed. This will keep the inventory at the minimum and meets then goals.	Course Syllabus	4, 12
7	EM 477	Dr. Ezzat	Transportation Systems Management	Course Specification	9, 11

No.	Course	Instructor	Information	Evidence	SDG/s
1					
1	<u>CME 341</u>	Dr. Walid	This course covers the study of electric, magnetic and electromagnetic static and time-varying fields. The bridge between electric circuits and electromagnetics is done through the study of transmission lines and their lumped-element model, transmission line input impedance, and power flow on lossless transmission line.	Course syllabus	17
2	<u>CME433</u>	Dr. Maged	This course serves SDG#17 in two aspects: 1. Power consumption: As power consumption is a main reason for global climate change, ICT should work towards reducing its emission for global sustainability. In this course, we teach the students how to design protocols for ICT that are power-aware and saving the lifetime of power sources. 2. Building reliable networks without infrastructure for data transmission: The course helps in teaching designing efficient protocols for data transmission in ad-hoc wireless networks. Data transmission in telecommunication is costly which requires large infrastructure. Ad-hoc networks helps in reducing	Course syllabus	17

			the cost for the future generations where small network can be built without infrastructure.		
3	CME442	Dr. Marey	This course addresses the problem of designing efficient and reliable communication systems through introducing the field of information theory. Those techniques help the student recognize the critical challenge of achieving reliable communication with high quality of service while maintaining the optimal level of resource management in terms of cost, bandwidth usage and energy consumption.	Course Syllabus,	17
4	CME431	Dr. Moustafa	The concept of adopting sustainability is already implemented in this course. Part of this course teaches the students first the definition of different key performance indicators such as delay, throughput, energy consumption, then how to design network systems by considering energy consumption reduction and efficiently utilize the network throughput, and lastly understand how to make a sustainable design of the network datacenter rooms.	Course Syllabus,	17

Courses focus on sustainability, environmental strategies, and rating systems such as LEED.

No	Course	Information	Evidence	SDG/s
1	ID 499	INTERIOR DESIGN STUDIO VIII - SENIOR PROJECT II This is the final studio course. It focuses on the multidimensional aspects of analyzing complex problems. Attention is placed on creativity and integration with previous experiences utilizing systematic design methodologies, research, programming, estimation, and detailing all phases of the design process.	Projects, Design for Environment (Implementing different sustainable solutions)	3-7
2	ID 250	INTERIOR MATERIALS AND SUSTAINABLE ELEMENTS This course canvasses the technical and aesthetic aspects of textiles. Emphasis is placed on product knowledge, specifications, technology, and terminology. The course also examines non- textile based materials. Students learn how to select, specify and apply appropriate materials and finishes on the basis of aesthetics, material cost, environmental impact and performance. In addition, the course presents the LEED rating system within the context of professional interior design practice.	Course content, projects and assignments.	3-7
3	ID 458	BUILDING SERVICES INTEGRATION This course surveys the integration of the following systems found in buildings: structural systems (skeleton, pre-cast, load bearing), mechanical systems (elevators, HVAC, plumbing), electrical systems (lighting, acoustics, and power)	Course content, projects and assignments.	3-7

		and safety fire protection systems. Students assess the best approaches to systems and services integration that correspond to user need and economic feasibility.		
4	ARCH 364	ENVIRONMENTAL CONTROL I The course covers a vast array of energy-related issues as they apply to site planning and architectural design. Topics include: thermal design comfort, site climate analysis, building thermal response, and solar system design; air treatment, distribution systems, and related energy systems; water resources supplies and treatment, distribution and disposal systems; together with electrical, vertical transportation, Communications, security, and fire protections systems.		
5	ARCH 365	ENVIRONMENTAL CONTROL II – BUILDING SYSTEM INTEGRATION /ACOUSTICS This course discusses the development and application of visual/auditory comfort criteria, lighting and acoustical design, and their respective design implications.	Course content, projects and assignments.	3-7
6	ARCH 465	SUSTAINABLE AND ENVIRONMENTAL DESIGN The course provides an overview of critical developments in sustainable building design strategies by examining environmental problems and possible solutions through design. It explains the principles of sustainability in architecture and urban design decisions that conserve natural and built resources, culturally important buildings and sites, and healthful buildings and communities.	Course content, projects and assignments.	3-7-11
Design studios incorporate green solutions and environmental strategies				3-7-11
SUSTAINABILITY  GREEN WALL The project have 3 green walls . in the health care and physical therapy . spa massage room exterior part its have a lot of benefits 1. Creates fire resistant layer 2. Increases the feeling of well-being 3. Increases productivity 4. Healthy indoor climate 5. Reduces ambient noise inside and outside 6. Reduces the ambient temperature 				
ID 499, Senior Project				

2. Research

Sustainability is one general theme that the college is focused on through all research themes. The figure shows six distinct research theme for the college where sustainability is a cross cutting theme.



Sample of research article in sustainability related areas are:

No.	Author	Paper/Project Title	Journal	Vol/Issue/pp	SDG/s
			Project Evidence		
1	Dr. Muneer	Thermal stability of nanocrystalline Al-10Fe-5Cr bulk alloy	Transactions of Nonferrous Metals Society of China	29/242-252	17
2	Dr. Ezzat	Three-Dimensional Response of the Supported-Deep Excavation System: Case Study of a Large Scale Underground Metro Station	Geosciences (Switzerland)	10/76/1-19	11
3	Dr. Abdelhadi	Analyzing Sustainability Awareness among Higher Education Faculty Members: A Case Study in Saudi Arabia	Sustainability	11/6837/1-13	4, 5
4	Dr. Abdelhadi	Learning style preferences of architecture and interior design students in Saudi Arabia: A survey	MethodsX	6/961-967	4, 5
5	Dr. Abdelhadi	Clustering students into groups according to their learning style	MethodsX	6/2189-2197	4, 5
6	Dr. Yasser	Experimental Study of Durability and Mechanical Properties of Concrete with Recycled Concrete Aggregate and Fly Ash	Contract		11
7	Dr. Ihab	Experimental Study of Durability and Mechanical Properties of Concrete with Recycled Concrete Aggregate and Fly Ash	Contract		11
8	Dr. Ihab	Assessment of the Sustainable Pedestrian Mobility in Riyadh City: A Case Study	Contract		3, 11, 13
9	Dr. Basel	Assessment of the Sustainable Pedestrian Mobility in Riyadh City: A Case Study	Contract		3, 11, 13
10	Dr. Ezzat	Assessment of the Sustainable Pedestrian Mobility in Riyadh City: A Case Study	Contract		3, 11, 13

11	Dr. Ezzat	Treatment of Expansive Soil Using Injected Polyurethane (PU) Liquid Foam: Experimental Study	Contract	9, 15
12	Dr. Tamer	Treatment of Expansive Soil Using Injected Polyurethane (PU) Liquid Foam: Experimental Study	Contract	9, 15
13	Dr. Tamer	Design of composite energy absorption devises for automotive applications: Experimental study on the effect of the working environmental conditions of GCC area	RIC Form, Contract	3, 11
14	Eng. Shabir	Cost Efficient Road Condition Assessment Approach for Developing	Contract	9
15	Eng. Shabir	Carbon Footprint Quantification: A Case Study of an Academic Building	Contract	3, 11