

Sustainable
Development
Report
2021-2022









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#### Who we are?

Prince Sultan University's Center for Sustainability and Climate (CSC) is committed to the United Nations Sustainable Development Goals (SDGs) through effective institutional resources management, innovative teaching and learning, research, national and international partnerships, continuous studies, and outreach. PSU shall undertake the following activities: form higher and steering committees, evaluate each SDG, formulate and develop related SDG policies, conduct awareness campaigns to the PSU community, establish a sustainability office, identify the SDGs related to each college, program, and course, and lab centers at PSU, and implement sustainability-related

#### Vision

To support Saudi Arabia's Vision 2030 and the United Nations Sustainable Development Goals (SDGs) towards sustainability and climate justice by inspiring action, developing leadership, and building networks.

#### Mission

Supporting the Saudi Arabia's Vision 2030 and the PSU's strategic directions, Prince Sultan University's Center for Sustainability and Climate (CSC) transform commitments into action and build a decarbonized, more sustainable world, driving technological and economic transformations to realize sustainable competitive advantage. To coordinate, promote, and accelerate interdisciplinary research and training on sustainability and climate, and the role of humans in the environment.

#### **PSU's Commitment to SDG 2030**

PSU is committed to the United Nations Sustainable Development Goals (SDGs) through effective institutional resources management, innovative teaching and I earning, research, national and international partnerships, continuous studies, and outreach.

PSU is also committed to net zero carbon university by 2060.





### **Foreword from President**

Greetings! It is a great pleasure for all of us here at PSU, and we are indeed delighted, pleased, privileged to be taking part in the Times Higher Education Impact Ranking. PSU is committed to applying the UN SDG 2030 as part of PSU with our strategic and support to the Kingdom of Saudi Arabia 2030 vision, which in terms of integrating the UN 2030, 17 global goals. Thus, PSU is participating in the upcoming Times Higher Education Impact Ranking, which is solely based upon the SDG 2030.

We at PSU are keen to show how PSU teaches the next generation of PSU students to a depth of sustainability in their lives. We will be demonstrating our commitment to meaningful education around SDGs in our programs and classrooms. So, PSU for higher committees and subcommittees to oversee and follow up on our performance and compliance with the SDGs.



Since the impact rankings are measured based on three broad areas such as research, outreach, and stewardship for the goals, PSU is always determined to perform very well. Therefore, PSU is significantly focusing on several SDGs, including SDG 4, which is quality education, and that's what PSU is all about. SDG 5, gender equality, is reflected in our student body, where 60 percent of our students are female.

SDG 8 Decent Work and that's also reflected in our graduates, about 90 percent of our graduates get jobs within three months. SDG16, peace and justice, reflects PSU outstanding law school and SDG 17, which is the partnership for goals comprehensive. So, we are looking forward to and excited about our continued success with SDG compliance.

Thank you.

Dr. Ahmed Bin Saleh Al-Yamani

President





# **Message from the Director**



### **Prof. Mohammad Nurunnabi**

PhD (Edinburgh), FAIA(Acad), SFHEA, FRSA, CMBE, CMA, FFA, FIPA, CPA

Director, Center for Sustainability and Climate (CSC)
Aide to the President and Chair in Accounting
Prince Sultan University, Saudi Arabia
Academic Visitor (Senior Member)
St Antony's College, University of Oxford, United Kingdom
Center for Sustainability and Climate



Prince Sultan University's Center for Sustainability and Climate (CSC) is committed to the United Nations Sustainable Development Goals (SDGs) through effective institutional resources management, innovative teaching and learning, research, national and international partnerships, continuous studies, and outreach.

Since the launch of Vision 2030 in 2016, the Kingdom has taken significant steps to scale up its climate action and environmental protection. Our mission is to support the Saudi Arabia's Vision 2030 and the PSU's strategic directions. Prince Sultan University's Center for Sustainability and Climate (CSC) transform commitments into action and build a decarbonized, more sustainable world, driving technological and economic transformations to realize sustainable competitive advantage. To coordinate, promote, and accelerate interdisciplinary research and training on sustainability and climate, and the role of humans in the environment.

"Prince Sultan University is the First Saudi University to Pledge Net Zero Carbon University by 2060"
"Prince Sultan University is the Second Saudi University in SDG 17 - Partnerships for the goals"

With the launch of the Saudi Green Initiative in 2021 as part of Saudi Vision 2030, the Kingdom has reaffirmed its belief in a sustainable future for all. According to Saudi Green Initiative "The first wave of more than 60 initiatives announced under SGI—and unveiled at the October 2021 Saudi Green Initiative Forum—represent over SAR 700 billion investment to contribute to the growth of the green economy. Under the patronage of HRH Crown Prince Mohammed bin Salman, the Saudi Green Initiative now takes efforts to the next level by unifying all sustainability efforts in the Kingdom to increase reliance on clean energy, offset the impact of fossil fuels and combat climate change."

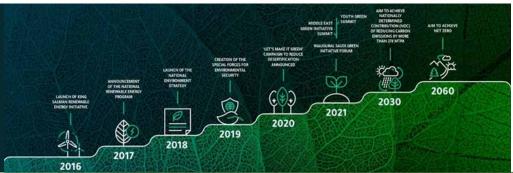
The Center for Sustainability and Climate (CSC) at PSU is strongly committed to contribute to the initiatives of Saudi Green Initiative, Saudi Vision 2030 and of course the United Nations Sustainable Development Goals (SDGs).

We will work together to make a better world.



Timeline of Saudi Green Initiative - A Sustainable Future for Saudi Arabia

Source: www.saudigreeninitiative.org







# **Strategic Collaborators**















# **Official Race to Zero Signatory**

We are part of the Race to Zero and are leading the education sector for a healthy and resilient zero carbon recovery in the lead up to COP26!













#### **Director of CSC**



# **Professor Mohammad Nurunnabi**

PhD (Edinburgh), FAIA(Acad), SFHEA, FRSA, CMBE, CMA, FFA, FIPA, CPA

Director, Center for Sustainability and Climate (CSC), Aide to the President and Chair in Accounting Prince Sultan University, Saudi Arabia, Academic Visitor (Senior Member) in St Antony's College, University of Oxford, United Kingdom

Professor Mohammad Nurunnabi, PhD (Edinburgh), SFHEA, FRSA, FAIA (Acad), CMBE, FFA, FIPA, CMA, CPA is the Director of Center for Sustainability and Climate, Aide to the President on Ranking and Internationalization, and Chair of the Department of Accounting at Prince Sultan University, Saudi Arabia. He is an Academic Visitor (Senior Member) of St Antony's College, University of Oxford, Oxford, United Kingdom. Previously he has taught in University of East London, United Kingdom (UK), University of Bedfordshire (UK), and Edge Hill University (UK). Prior to his academic career, he worked as a financial team member in ADVFN Plc (covers in excess of 70 stock exchanges from across the globe), London, UK. He holds a PhD with an outright pass (no corrections) from the University of Edinburgh, UK. He is a Certified Public Accountant (CPA), a Chartered Management Accountant (CMA), a senior fellow of Higher Education Academy (SFHEA), UK, an academic fellow of the Association of International Accountants (FAIA-Acad), fellow of the Royal Society of Arts (FRSA), Certified Management & Business Educator (CMBE), Fellow, Institute of Financial Accountants (FFA), and Fellow of Institute of Public Accountants (FIPA). He is an academic member of the Institute of Management Accountants (IMA), European Accounting Association (EAA), British Accounting and Finance Association (BAFA), and American Accounting Association (AAA). He has been active within the accounting profession and is a Vice President (Education) of the IMA Riyadh Chapter, Saudi Arabia and a Global Advisory member of the Diversity Thought Leadership Pipeline (DTLP) Committee of the IMA, USA. Under his leadership, Prince Sultan University (PSU) became the second private university in the world (outside US) to earn AACSB accounting accreditation in 2022. Recently, he is co-chairing Teaching & Curriculum Committee of International Accounting Section of American Accounting Association (AAA).





### **Associate Director of CSC**



# Dr. Sanjida Haque

Associate Director, Center for Sustainability and Climate (CSC) Prince Sultan University, Saudi Arabia

Dr. Sanjida Haque is an Associate Director of Center for Sustainability and Climate (CSC) at Prince Sultan University, Saudi Arabia. She has a PhD and Master from Universiti Sains Malaysia, Malaysia

### **Faculty Sustainability Ambassadors**



**Dr. Syed Umar Amin**Computer Science, College of Computer and Information Sciences (CCIS)



Ms. Hana A. Alahmari
Information Systems, College
of Computer and Information
Sciences (CCIS)





# **Faculty Sustainability Ambassadors**



**Dr. Mohammed Bakjaji** Law, College of Law (CL)



**Dr. Enis Omerović** Law, College of Law (CL)



Prof. Jawahitha Sarabdeen
Acting Associate Chair &
Director, MCL Program,
College of Law, PSU, Riyadh



**Dr. Rehana Parveen** Law, College of Law (CL)



**Prof. Izani Ibrahim**Finance, College of Business
Administration (CBA)



**Dr. Zainab Rawshdeh**Management, College of
Business Administration
(CBA)



Prof. Francisco Bastida
Accounting ,College of
Business Administration
(CBA)



**Prof. Zahirul Hoque** Law, College of Law (CL)



Dr. Samar El Sayad Accounting, College of Business Administration (CBA)



**Dr. Amira Khattak**Marketing, College of
Business Administration
(CBA)





# **Faculty Sustainability Ambassadors**



**Dr. Alia Mitchell**Linguistics and Translation,
College of Humanities and
Sciences



Prof. Hadeer Abouelnagah
Linguistics and Translation,
College of Humanities and
Sciences



Prof. Mohamad Boudaina
Mathematics and Sciences,
College of Humanities and
Sciences (CHS)



**Dr. Raghed Tawrneh**General Studies, College of
Humanities and Sciences
(CHS)



Ms. Fawzia Goni PYP, College of Humanities and Sciences (CHS)



**Dr. Israa Fardous**Assistant Professor of Interior
Design Department, College
of Architecture and Design
(CAD)



Al-Atroush
Assistant Professor of
Civil and Environmental
Engineering, College of
Engineering



Dr. Mahajan Sagar Bhaskar
Assistant Professor of
Electrical Engineering
Department, College of
Engineering



Labib
Assistant Professor of
Architecture Department,
College of Architecture &
Design





# **Student Sustainability Ambassadors**



Yumna Alnadeem Law, College of Law (CL)



Meshari Samir Alalkami Information Systems, College of Computer and Information Sciences (CCIS)



Reema Saleh I Alhudhaif MBA, College of Business Administration (CBA)



Abdullah Dabaan Software Engineering, College of Computer and Information Sciences (CCIS)



Aljoaharah Dhafir Saad Alshahrani Accounting, College of Business Administration (CBA)



Renad Mohammed Algarni
Architecture, College of
Architecture and Design
(CAD)



Laith Alamro
Management, College of
Business Administration
(CBA)



**Dimah Waleed Alharkan**Architecture, College of
Architecture and Design
(CAD)



Rahf Aloubal
Software Engineering,
College of Computer and
Information Sciences (CCIS)



**Shahah Alnafia**Applied Linguistics, College of Humanities and Sciences (CHS)





# **Student Sustainability Ambassadors**



Rawan Alnafeesah
Applied Linguistics, College
of Humanities and Sciences
(CHS)



Amal AlSaud
Applied Linguistics, College
of Humanities and Sciences
(CHS)



Mashael Almualam Translation, College of Humanities and Sciences (CHS)



Abdullah Al Shawaf Civil and Environmental Engineering, College of Engineering (CE)



**Danah Dkiel**Finance, College of Business
Administration (CBA)



Saud Abdulrahman Almogbel Finance, College of Business Administration (CBA)



Aljwhrah Albegami Marketing, College of Business Administration (CBA)



AlDanah Alhokair Accounting, College of Business Administration (CBA)



**Muzen Al-Assaf** Law, College of Law (CL)





# **SDG Higher Committee 2022-2023**



Dr. Ahmed S. YamaniPresidentSDG Higher Committee Chair



Dr. Saad Al-Rwaita

Vice President, Administrative and Financial Affairs

SDG Higher Committee Member



Dr. Mohammad Aljibreen
Vice President, Academic Affairs
SDG Higher Committee Member



**Dr. Heba Khoshaim Vice President, Female Campus**SDG Higher Committee Member,

SDG-5 Committee Chair



Aide To The President on Ranking & Internationalization, Director of CSC, Chair of Accounting Department SDG Higher Committee Co-Chair, SDG-17 Committee Chair

**Prof. Mohammad Nurunnabi** 



Dr. Jolly Sahni

Director of Jubilation Office
SDG Higher Committee Member,
SDG-8 Committee Chair





# **SDG Higher Committee 2022-2023**



### Dr. Emna Chikhaoui

Senior Compliance & Legal Manager, Acting Director of Policies and Development Unit

SDG Higher Committee Member, SDG-16 Committee Chair



## Dr. Tahira Hoke

Aide to the President, Director of the Evaluation and Academic Accreditation Center (CW)
SDG Higher Committee Member



Dr. Sanjida Haque

Associate Director, Center for Sustainability and Climate (CSC) SDG Higher Committee Member



Mr. Victor Mendoza

Director of the Evaluation and Academic Accreditation Center (MC) SDG Higher Committee Member



Mr. Lester Bello

Programmer, Public Relations and Media Center
SDG Higher Committee Member





### **SDG 5 Committee**



**Dr. Heba Khoshaim Vice President, Female Campus**SDG Higher Committee Member, SDG 5
Committee Chair



Dr. Amira AlKhawaja
Assistant to the Vice President, WC
SDG 5 Committee Co-chair



Dr. Tanzila Saba
Associate Chair of Information Systems
Deptartment, Lab Leader of Artificial
Intelligence & Data Analytics (AIDA)
SDG 5 Committee Member



Dr. Dina El-Dakhs
Chair of Department of Linguistics
and Translation, Lab Leader of Applied
Linguistics Research Lab (ALLAB)
SDG 5 Committee Member



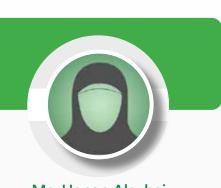
Ms. Saima Rashid
Director of Center for Statistics and
Information (CSI)

SDG 5 Committee Member



Ms. Arooj Yaswi Lecturer in College of Humanities & Sciences

SDG 5 Committee Member



**Ms. Hanan Alsubai** SDG 5 Committee Member





### **SDG 8 Committee**



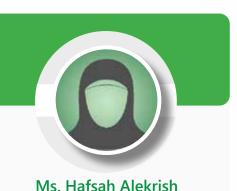
Dr. Jolly Sahni
Associate Director of MBA Program,
Director of Jubilation Office
SDG Higher Committee Member, SDG-8
Committee Chair



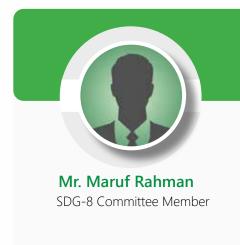
**Dr. Yazeed Alfakhri Dean of Student Affairs**SDG-8 Committee Co-chair

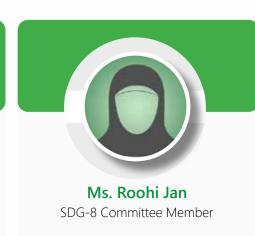


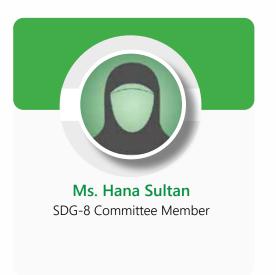
Dr. Roaa Atiyeh
Assistant Professor, Department of Interior Design Engineering
SDG-8 Committee Member



SDG-8 Committee Member











### **SDG 16 Committee**



Dr. Emna Chikhaoui

Senior Compliance & Legal Manager, **Acting Director of Policies and Development Unit** 

SDG Higher Committee Member, SDG-16 Committee Chair



Dr. Shafiqul Hassan **Assistant Professor in College of Law** SDG-16 Committee Co-chair



Dr. Rakan Alyamani Assistant Professor in College of Engineering SDG-16 Committee Member



Dr. Farida Saleem **Faculty Member in College of Business** Administration SDG-16 Committee Member



#### Dr. Samaher Fallatah

Vice-Dean of College of Architecture and Design (CAD) and Chair of **Interior Design Department** 

SDG-16 Committee Member



#### Mr. Bryan Morales

**Associate Director of the Evaluation** and Academic Accreditation Center(EAAC)

SDG-16 Committee Member



Mr. Feras Mahfoos Admin, Deanship of Student Affairs SDG-16 Committee Member





### **SDG 17 Committee**



Prof. Mohammad Nurunnabi

Aide To The President Of Research, Ranking & Internationalization, Chair Accounting Department SDG Higher Committee Co-Chair, SDG-17 Committee Chair



Dr. Nof Al-Sufyani General Supervisor for Public Relations and Media Center

SDG-17 Committee Co-chair



Dr. Hazem Abu-Farsakh

Head of Department of Mathematics and Sciences in College of Humanities & Sciences

SDG-17 Committee Member



Dr. Elham Dannoun

Associate Chair of Department of Mathematics & Sciences in College of Humanities & Sciences

SDG-17 Committee Member



#### Dr. Umashankar Subramaniam

Associate Professor of Communications and Networks Engineering Department in College of Engineering

SDG-17 Committee Member





### **SDG 17 Committee**



Aide to the President, Director of the Evaluation and Academic Accreditation Center (CW)

SDG-17 Committee Member



Ms. Muneera Aldhubaiban
Community Service Director, Community Services
& Continuing Education Center
SDG-17 Committee Member



Dr. Sanjida Haque
Associate Director, Center for Sustainability and Climate (CSC)
SDG-17 Committee Member



**Director, Translating and Authoring Center**SDG-17 Committee Member



Dr. Samar Elsayad
Assistant Professor, College of Business
Administration
SDG-17 Committee Member





# **Sustainability Fellows**



Prof. Mohammad Nurunnabi PhD (Edinburgh), FAIA(Acad), SFHEA, FRSA, CMBE, CMA, FFA, FIPA, CPA Director, Center for Sustainability and Climate (CSC), Aide to the President and Chair in Accounting(CHS)



**Dr. Sanjida Haque**Associate Director, Center for Sustainability and Climate (CSC)



**Dr. Tahira Hoke**Aide to the President,
Director of the Evaluation
and Academic Accreditation
Center (CW)



Dr. Syed Umar Amin
Assistant Professor, Computer
Science College of Computer and
Information Sciences (CCIS)



Ms. Hana A. Alahmari Lecturer, Information Systems College of Computer and Information Sciences (CCIS)



**Dr. Mohammed Bakjaji**Faculty member,
College of Law (CL)



**Dr. Enis Omerović**Assistant Professor in International
Law College of Law (CL)



Prof. Jawahitha Sarabdeen
PhD (MMU), MCL(IIUM), MSHRM(UOW), LL.B.
(Hons)(IIUM), CLPP(TMU) Fellow (FCG) Chartered
Governance Institute Canada (CGIC) Barrister &
Solicitor, Ontario, Canada. Acting Associate Chair
& Director, MCL Program, College of Law, PSU,
Riyadh





# **Sustainability Fellows**



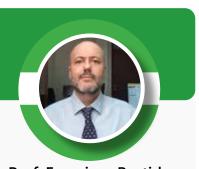
**Dr. Rehana Parveen**Assistant Professor, College of Law (CL)



Prof. Izani Ibrahim Professor of Finance, College of Business Administration (CBA)



**Dr. Zainab Rawshdeh**Assistant Professor,
College of Business
Administration (CBA)



Prof. Francisco Bastida
Leader of the Environment, Social,
Governance and Accountability Lab
(ESGAL) at the Prince Sultan
University. Accounting ,College of
Business Administration (CBA)



**Prof. Zahirul Hoque**Professor, College of Business
Administration (CBA)



Dr. Samar El Sayad
Assistant Professor of Accounting
College of Business Administration
(CBA)



**Dr. Amira Khattak**Associate Chair - Marketing Program
College of Business Administration
(CBA)



Dr. Alia Mitchell
PFHEA EdD (University of Cincinnati),
Vice Dean, College of Humanities and
Sciences (CHS) Director, Teaching and
Learning Center (TLC) Linguistics and
Translation Department in CHS





# **Sustainability Fellows**



**Prof. Hadeer AboueInagah**Professor of English Literature and
TranslationCollege of Humanities and
Sciences (CHS)



Prof. Mohamad Boudaina Energy, Water, and Environment Lab - Leader, College of Humanities and Sciences (CHS)



**Dr. Raghed Tawrneh**General Studies - Assistant
professor, College of
Humanities and Sciences (CHS)



Ms. Fawzia Goni
PYP, College of Humanities and
Sciences (CHS) of Business
Administration (CBA)



**Dr. Israa Fardous**PhD (Aberdeen), RGU
Assistant Professor of Architecture and Design Department of Interior Design
College of Architecture and Design
(CAD)



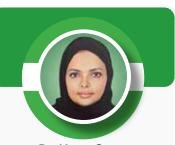
Dr. Mohammed Ezzat Al-Atroush
Assistant Professor of Civil and Environmental
Engineering, Member of the soil improv. Tech.
Committee, ASCE-GI, Member of Structures
and Material (S&M) Research Lab, Faculty
Advisor of the PSU-ASCE Student Chapter
Engineering Management Department
College of Engineering (CE)



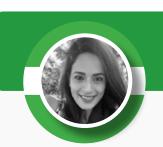
Dr. Mahajan Sagar Bhaskar
PhD (UJ), SMIEEE, Assistant Professor,
Renewable Energy Lab, Department of
Electrical Engineering, College of
Engineering, Prince Sultan University
(PSU)



Dr. Wafa Abdelmajeed Labib
Ph.D., F.HEA, M.ASCE, Architecture
College of Architecture and Design
(CAD)



**Dr. Hana Omar**Director of Community Support and Acting Director of International Relations and Partnerships at King Salman Humanitarian Aid and Relief Centre, Saudi Arabia



**Dr. Sana Malik**Associate Professor, University of
Management and Technology (UMT),
Pakistan





# **Impact Rankings**

















Sustainable
Development
Report 2021-2022
No Poverty





## **No Poverty**

# Proportion of students receiving financial aid to attend university because of poverty

Students receiving financial aid



1485

Number of students got scholarship



1434

Number of students got partial Scholarship (Low-Income)

# **Community anti-poverty programmes**

### Local start-up assistance

Provide assistance in the local community supporting the start-up of financially and socially-sustainable businesses through relevant education or resources (e.g. mentorship programmes, training workshops, access to university facilities).

### **Academic Service Learning Programs**

#### 1. Elite Program in Collaboration with Monsha'at



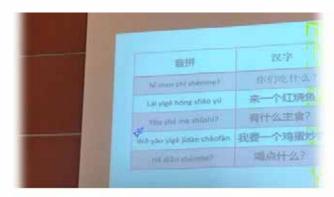






#### 2. Chinese Language Course & English Language Course

CSCEC welcomed ministry of education members during summer 2019 to be trained by PSU staff member, PSU faculty members from College of Humanities, and external qualified instructors as well to meet the need of the registered trainers in the summer courses with a lack of faculty members existence during summer. The total number of trainers at PSU was 80. The main goal for this training course is to teach the ministry of higher education employees on the basics of Chinese Language according to the governmental decree decision to teach Chinese in government schools in future.







### 3. inistry of Interior



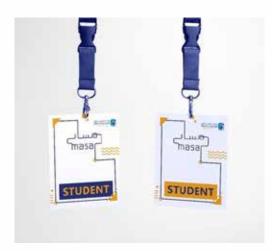
The Community Service and Continuing Education Centre had a Cooperation with the Ministry of Interior to provide several training programs of English to their employees in different levels and classes based on a placement test. The program was held twice by PSU faculty members from College of Humanities, English Department.





#### 4. Masar

Masar is the first Pre-College Program in the Kingdom of Saudi Arabia designed for high school students to experience college life, prepare for academic success, and explore options. It is based on workshops for various majors to help students decide which majors they should specialize in. It was initially proposed by Ms. Nafla AlKahtani's students as a class project. It was then implemented successfully in collaboration with the Community Service and Continuing Education Center. It was implemented in the spring semester of 2018. Masar usually runs for 2 weeks, and by the end of the program, students will be enlightened and knowledgeable about their next step. The program was held twice by PSU faculty members from College of Humanities, English Department.











#### 5. SABIC

In a collaboration with SABIC, CSCEC customized a program included the most knowledge that a high school graduate needs before studying abroad. The program required a high school graduate with a full time staying at a hotel, being away from his/her family, being dedicated to a full-time schedule since morning to evening at PSU campus. The program allowed them to gain educational, cultural, and life coaching knowledge to be able to accommodate studying abroad alone.







### 6. Riyadh Bank International Program

The Community Service Office & the Business Administration college in collaboration with Riyadh Bank have established the Riyadh Bank Training Program to ensure the best quality is delivered. The program offers training from PSU Business Administration faculty along with Euromoney Solutions Company to Riyad Bank newly employees as stated in CSCEC mission and vision to provide the knowledge to our community reaching several categories of the audience to meet the need of our society.









### Local start-up financial assistance

Provide financial assistance to the local community supporting the start-up of financially and socially sustainable businesses.





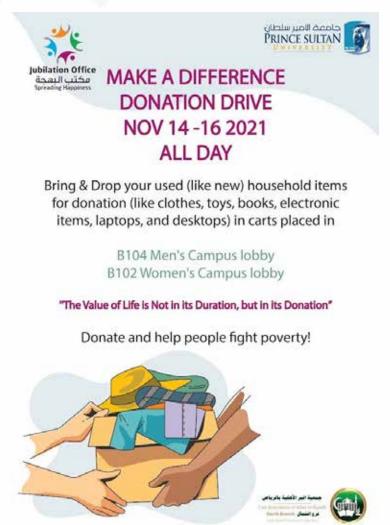




### Programmes for services access

Organise training or programmes to improve access to basic services for all.









Sustainable
Development
Report 2021-2022
Zero Hunger





# **Zero Hunger**

### Student hunger

Sustainable food choices on campus for all on campus, including vegetarian and vegan food











### Healthy and affordable food choices for all on campus







عزيزاتي منسوبات الجامعة ..

نود تذكير كم بتوفر ألة بيع ذاتي للأغذية الصحية قليلة السعرات الحرارية والخالية من الجلوتين، وذلك في مبنى (3) الدور الأرضى عند وجود ملحظات نرجو الإتصال بقسم الخدمات العامة والصيانة تحويلة: 8395

#### Dear all ...

We would like to inform you that vending machine of low calorie and gluten free food is available in building (3) ground floor. In case of breakdowns, do not hesitate to contact the General Services & Maintenance Department Ext: 8395





# **National hunger**



Provide access on food security and sustainable agriculture and aquaculture knowledge, skills or technology to local farmers and food producers.



Events for local farmers and food producers to connect and transfer knowledge



University access to local farmers and food producers (e.g. labs, technology, plant stocks) to local farmers and food producers to improve sustainable farming practices.



Sustainable food purchases - Prioritise the purchase of products from local, sustainable sources.







The Interior Design Department is pleased to invite

How to become a Designer in Sustainable Innovation?

#### Speakers:

Patrick Le Quément ser of the Sustainable Design School of Nice, France and designer.

#### Grant Linscott -

educator and consultant in the fields of Design Thinking. Design Strategy, and Business Innovation





Sustainable Development Report 2021-2022

Good Health & Well Being





# **Good Health and Well-being**

### Number graduating in health professions

PSU has 77 scholarly publications on Good health and well-being that has 1,748 views, cited 647 times and has 8.40 citations per paper.



#### Collaborations and health services

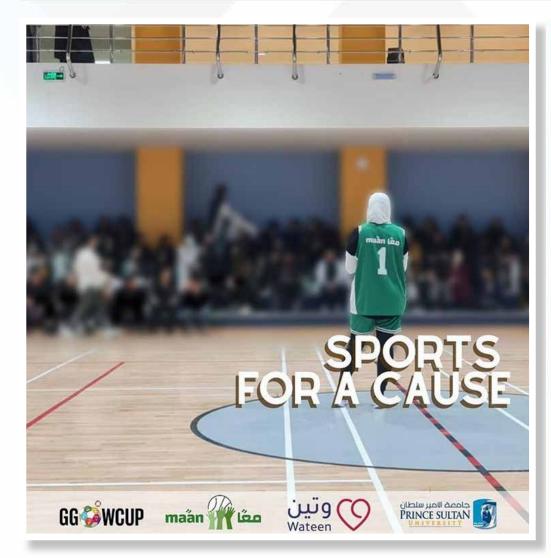
Current collaborations with local, national, or global health institutions to improve health and well-being outcomes.















### اتفاقية تعاون

إنه بتاريخ ١٩/٥/ ١٣٩١هـ الموافق ٥٠/٠/ ٢٠١٨م تم يعون الله وتوفيقه توفيع هذه الاتفاقية بمدينة الريانس يين ڪل من:-

- ١٥ مؤسسة سلطان بن عيد العزيز ال سعود الخيرية ومقرها الرياض وعنواتها ص ب ١٤٤٠٠ الرياض ١١٥٢٦ ويمثلها في التوفيع على هذه الاتفاقية صاحب السمو الملكي الأمير فيصل بن سلطان بن عبدالمزيز يصفته الأمين المام ويشار زابها فيما بعد (طرف أول).
- ٢- جامعة الأمير سلطان ومقرها الرياض وعنوانها ص ب ١١٨٣٢ الرياض ١١٥٨٦ ويمثلها في التوظيع على هذه الانفاقية صاحب السمو الأمير الدكاتور عبدالعزيز بن محمد بن عياف بصفته رثيس مجلس الأمتاء ويشار إليها فيما بعد (طرف ثائي).

أقر الطرفان أعلاه بأهليتهما المتبرة شرعاً ونظاماً على التعاقد والتصرف واتفتا على ما يلي:

حيث أن الطرف الثاني يقدم خدماته في مجال التعليم ، وحيث أن الطرف الأول جهة تهدف الى دعم المنظمات غير الربحية بفية تطوير الخدمات المستدامة والفاعلة ، التي تهدف الى دعم أفراد المجتمع لتمكينهم من تنمية مجتمعاتهم المحلية ، وحيث سبق للطرف الأول توقيع اتفاقيات تعاون مختلفة مع الطرف الثاني ويرغب حالياً في ابرام الله الله الله تعاون وخدمات تسهم في دعم الأهداف المجتمعية ، فقد القبق الطرفان على ما يلي :

#### البند الأول

يعتبر التمهيد أعلام جزباً لا يتجزأ من هذه الانفاقية .



صلحة ١ من ٢









# Health outreach programmes

Deliver outreach programmes and projects in the local community (which can include student volunteering programmes) to improve or promote health and well-being including hygiene, nutrition, family planning, sports, exercise, aging well, and other health and well-being related topics. This can also include outreach programmes to displaced or refugee communities local to the institution.









# SUMMARY OF OUTREACH **ACTIVITY IN 2020**

**Enondinator Clubreach Committee** 

General Sciences Outreach Committee organized . Nutrition Booth the second event this year "A day for our healthy . Physical Therapy Booth hearts". The event was held on 27th February. . Fitness Booth 2020 at Building 102 main lobby from 10:00 AM . Nursing Heart Center Booth to 1.00PM. A group of medical professionals from Sincere thanks are due to Dr. Hiba Khosiam, King Faisal Specialist Hospital & Research Centre Dr. Elham Dannoun , Dr. Fahda -AlThonyan and event. Five (5) booths were placed in the campus. Dr. Noor Hameededdin, Ms Arooj Yaswi and Ms and for each booth, five professionals from Neelofar Nadeem who rendered full cooperation (KFSH&RC) were deputed. They counseled the and support to make this event a great success. students, staff and admin officials and provided. I look forward, to work in association with all them with all necessary information about how to. faculty, students and administration to make all keep their hearts healthy and how to stay fit. They future events a great success too.

also explained to them the benefits of proper nutrition. The names of the booths were as:

Riyadh were invited by our university for this members of outreach committee Dr Seema Gui

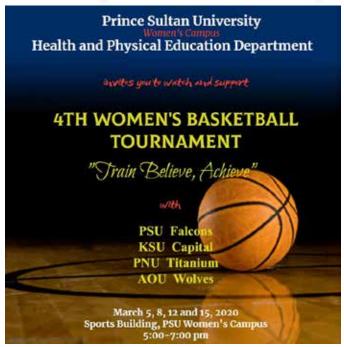




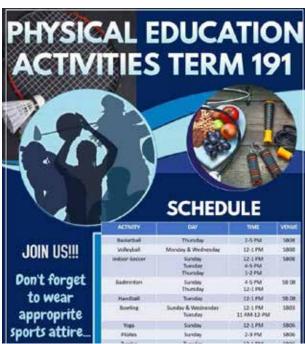


# **Shared sports facilities**

Share sports facilities with the local community, for instance with local schools or with the general public.











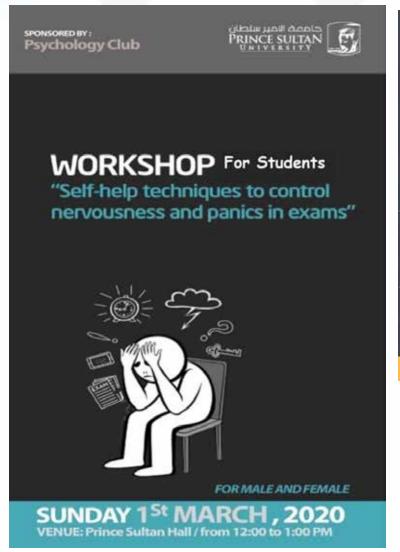






# Mental health support

Provide students and staff with access to mental health support

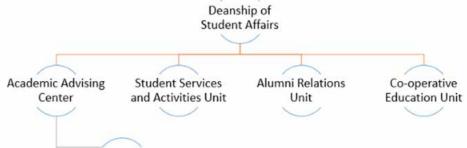












Academic Advising Coordination Unit

Educational **Enhancement Unit** 

Student Support Unit

# **Smoke-free policy**

#### Public:

The university is an institution that has been established to serve its community. The work and conduct of its employees will be directed toward this end. The society has a system of values, regulations, and policies which the university should comply with and provide support for. Thus:

- · Faculty members should treat the general public with courtesy, respect and dignity.
- · Faculty members should provide the community with programs that are relevant, accessible and of high quality.
- Faculty members should avoid intentional misrepresentation of personal views as a statement of the position of the university.
- Faculty members should promote good citizenship by participating in activities that lead to the progress of the community including volunteer work.
- Faculty members should avoid public discussions of political or religious issues. Preaching and group worshipping other than Islam are prohibited.
- The use and/or importation of drugs or alcohol are criminal offenses, with very serious penalties in the courts Smoking is also prohibited in all buildings on campus.
- · Female faculty members are expected to dress conservatively (i.e., Abayas and scarves) in public places. They are not allowed to drive cars or operate any motor vehicles in the Kingdom.

### Scholarship:

The fact that faculty members are expected to be active and preferably at the forefront of their professional areas in science, technology, research, and

PSU PSU Policy Manual 2016 Page 109 of 177





Sustainable
Development
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Quality
Education





# **Quality Education**

# Proportion of graduates with teaching qualification



# **Proportion of first-generation students**



518

Number of students starting a degree



76

Number of first-generation students starting a degree

# **Public resources (lifelong learning)**

Provide free access to educational resources for those not studying at the university – e.g. computers, library, online courses, and access to lectures.



No. of Academies



No. of Companies with E4E students



Prince Sultan University is a result of effort, the Custodian of the Two Holy Mosques, King Salman bin Abdulaziz, may Allah preserve him. The education for employment project at the university provides the most important international training programs targeted at graduates of Saudi colleges and universities who hold a bachelor degree.

It is essential that attention be paid to this category of both sexes' national youth population and find integrated scientifically based programs to develop their capacities to preserve our society's future features. To ensure that the pace of development continues, and although the practice of work is a contribution to national development, it is undoubtedly a means of earning and providing decent livelihoods. Having young men and women getting jobs is a goal for each family. An obsession haunts parents since end of the son and daughter's association at the university stage to searching for work where that ratio of youth unemployment in Saudi Arabia is 60% in both sexes, about 37% in males and 63% in females.

Hence, the Center's idea, which the university's officials give, notably His Highness Prince Dr. Abdulaziz bin Mohammed bin Ayyaf, Chairman of the University's Board of Trustees. In response to King Salman bin Abdelaziz's desire, since he was Prince of Riyadh, to actively espouse Saudi society's issues. The aim is to qualify university and college graduates who experience difficulties finding suitable job opportunities commensurate with their specialties and fill the shortage of skills and knowledge needed to meet their labor market needs.





# The Centre and Vision 2030

The Education for Employment program is designed to keep pace with the ongoing development and rehabilitation of hundreds of young people from various universities and colleges in order to build the capacities and possibilities necessary to achieve the ambitious objectives of Vision 2030 and to achieve the aspirations of the University of Prince Sultan to serve the community by supporting and developing the youth of the country and thus achieving the objectives of the National Transformation Program.



Through, the Education for Employment program, a strategic partnership project has been established between Prince Sultan's University and eight leading global technology companies worldwide. Namely, Cisco, Juniper, Oracle, Microsoft, SAP, Huawei, Red hat and VMware. The aim is to transfer global technical knowledge, expertise, and technical skills to the Kingdom and rehabilitate and build Saudi youth who suffer from job security, particularly university graduates.

### Global partnerships













# **E4E Graduation Ceremony**



The centre provided for us the best courses and the most recent laboratory, in addition to instructors at a high level of experience, and opened the university doors for us 24 hours to apply and prepare for exams. I am the first Saudi to get it, and my number in the world is 193.

- Eng. Al-Mezal







The important of this center lies in developing the skills of graduates and preparing them for the job market in a number of important programs such as (Cisco, Oracle, Juniper, Microsoft and SAP), indicating that he would like to study the Cisco program. Because there is nearly 90% of the labor market companies need Cisco certificates

- Ahmed Al-Sharif







Since my graduation, i have been looking for programs that develop my skills and abilities until God, through a colleague, helped me to join the King Salman Center for Education and Employment, which includes a large number of programs required by the labor market. He joined the SAP program after completing the English language course prepared by the center.

- Moath Abdullah Al-Daraan





The CCIE certificate represents a great challenge for anyone who wants to go through this experience, especially after the controversy over whether we can pass the test, and it also represent for us to chart the right way to continue this fast field development

- Eng. Rami Bin Matouq Hassan Al-Obaidi











#HappeningNow

كلمة مدير جامعة الامير سلطان الدكتور/احمد بن صالح @PSU\_RUH #E4E #PSU

#### Translate Tweet





There are special courses in the center to qualify graduates, and this is what encouraged me to join it and develop my capabilities. Regarding the means by which he learned about the launch of the program, Al-Enezi said: I have friends with whom I communicate about such matters, and through them I learned about the start of registration in the program, and we have now started to study the English language, and then after four months we will start studying the specialization for a period of seven months according to choice the person for the program he wants, indicating that he has determined his desire to start joining the program, which is to study the Cisco program and obtain the (CCNA) and (CCNP) certificates, until reaching the highest certificate, which is (CCIE).

- Faisal Turkey Al-Enezi





Such a program is rarely found in universities and training centers, in addition to direct cooperation between PSU and Cisco the leader in this field.

### - Eng. Muhammed Hosni Bukhari





This certificate means a lot to me, so it is enough that I am one of only 27 thousand people around the world who hold this certificate, and I have realized through several interviews that this certificate makes a quantum leap in employment and salary.

- Eng. Aqeel Abu Bakr







# **Public events (lifelong learning)**

Host events at university that are open to the general public: public lectures, community educational events.

CSCEC is part of Saudi vision 2030 in empowerment as well as entrepreneurship by providing PSU beautiful landscapes for companies, home businesses, food trucks owners as well as any individual from society who can visit PSU events and get inspired to start his/ her own as well. PSU creates the most enjoyable environment where all the family members can spend great time together as well.

# **Career Expo**











# **PSU Street Fair**









**Open Day** 











# **Productive Family Exhibition**









# **Law Exhibition**









# **Education outreach activities beyond campus**

Undertake educational outreach activities (e.g. tailored lectures or demonstrations) beyond campus – in local schools, in the community. This can include voluntary student-run schemes.

# **Community Bounding**

CSCEC established this unit to build the community by the community individuals themselves in providing free courses taught by PSU faculty or students. This will improve the knowledge of society individuals and make them feel more productive toward their community as well.

### Mishkat (Annually 2012-2017)



# Joud (Every Semester from 2015 to 2016)



**Elderly Program (Annually 2016-2019)** 





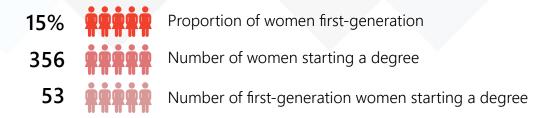


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equality





# **Proportion of graduates with teaching qualification**

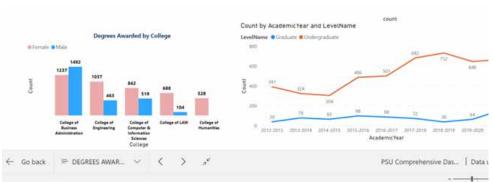


### **Student access measures**

# **Tracking access measures**

Systematically measure and track women's application rate, acceptance or entry









# **University Statistic for Academic Year 2021-2022**

Faculty (including PYP, University level and TAs) 522

Admin 391

Student (Master)

**140 ♣♠♠♠** Male

**138 \*\*\*** Female

278 **††† † † †** Total

Student (Bachelors)

**2179** \*\*\* Male

**2875** \*\*\*\* Female

**5054 ††† † † † † † † Total** 

Student (PYP)

**664 \*\*\*** Male

586 \*\*\*\* Female

**1250 † † † † \* \* \*** Total

**PSU Population** 

**3463** \*\*\*\* Male

**4032 \*\*\*\*** Female

**PSU Alumni** 

**Bachelors** 

**2468** \* \* \* Male

**4277 \*\*\*** Female

**6745 ††† † † † † † †** 

Masters

**422** \*\*\* Male

**486 \*\*\*** Female

908 **††† † †** Total

PSU Graduates (Total) 7653

Program AT PSU (Graduate and Undergraduate)

College of Architecture and Design 2

College of Business Adminstration 5

College of Humanities 2

College of Law 2

College of Engineering 6

College of Computer science & Information Systems 5

Program AT PSU (total) 22





# Policy for women applications and entry

Prince Sultan University PSU Policy Management System Accessibility, Non-discrimination, and Harassment Policy Policy Code: GV0007 Policy Name: Accessibility, Non-discrimination, and Harassment Policy Handler: The President Office Date Created: 15 August 2020 **Date of Current Review:** 15 August 2020 University Council Approved by: Date of Approval: 02/09/2020

### Women's access schemes

# **Academic Advising Center Brochure**



Scholarships 40-50% for Applied Linguistics & Translation Majors







# Women's application in underrepresented subjects

**PSU WiDS 2022** 



# Sixth **IEEE International** Conference for Women in **Data Science**





THE WOMEN IN DATA SCIENCE (WIDS)
INITIATIVE AIMS TO INSPIRE AND EDUCATE
DATA SCIENTISTS, REGARDLESS OF
GENDER, AND SUPPORT ARAB WOMEN IN THE FIELD.

March 14-15, 2023

### **OBJECTIVES OF WIDS**

Present high profile international researchers and industry pioneers and female data scientists.

Promote higher representation of Women in Data Science.

Connect regional researchers and practitioners to pioneering global data science networks.

Demonstrates the Kingdom's direction to enhance academic research, which contributes to the national development in accordance with the kingdom's vision 2030.



ided by data science when applied to e fields of social innovation. inthropy, international development nd humanitarian asd - Dr. Tanzila Saba. WiDS Ambassador PSU







# STEM Exhibition Day,11th May 2022\_ Women & Girls in Science









# STEM Exhibition Day Data Science Club Women in STEM: Change the World!

Wednesday, 11th May, 2022



Data Science Club under the supervision of Artificial Intelligence and Data Analytics (AIDA) Lab at Prince Sultan University, Riyadh, KSA is pleased to invite you to the STEM Exhibition Day (Wednesday, 11th May, 2022 / 09:00 AM - 02:00 PM) aligned to Women & Girls in Science Day.

# International Day of Women & Girls in Science, Feb 11, 2022



Data Science Club at Prince Sultan University under the supervision of AIDA lab is pleased to organize the INTERNATIONAL DAY OF WOMEN & GIRLS IN SCIENCE on FEB 11, 2022 at 2-6PM Riyadh Time. This Day allows us to honor women's significant achievements in science and place a much-needed focus on girls entering Science, Technology, Engineering, and Mathematics (STEM) careers. Due to the fastest-growing technical advancement in jobs, STEM needs women.



ONLINE LECTURE

MONDAY

22 Nov 2021

17.00-18.00h

Google Meet

For further information

Dr. Beatriz Villanueva

ARCH department PSU

boside@psuedu.sa



# Women in Architecture from 1975 until today



UPV between 2014 and 2019. Apart from the UPV, she has taught at Leibnic.

University in Harmover, the Architectural

Association in London, Virginia Toch in U.S. TU Berlin, (SOKU Vierna, Septemb

University at Floris and LWV in Venoe In 1991 she co-founded carbs gorser-eve abares argutestes. prohibitional firm that contigued, among others. Massanassa Auditorium and Massanassa Sown Half, 1. Their work has

boar avoided by the Constalled

Whenen and Mile in Landscape.

Vatenciana in 2017, has perticipated by the International Exhibition fün Stagel Cin

Archbookes and Planning' in Hannover, Valencia and Ventra and Rey have been

styted to participate in 2018 Vence Blannate Spain Particip with the event "rest\_EATMMO(pages)".

Biotyleov Research Prize, has

perforpated in 2nd Canary Islands. Biennel in 2005 and she has lectured

and witten extensively on gender maintening and feminer into unblacture and ubanism.

In this lecture she will present an extract from

her PhD dissertation

-Sobresaliente Cum

Laude - in 2016.

Women in Architecture. 1975, 2015, that obtained

the maximum calcification

# WIDS FOR HIGH SCHOOL

- WiDS Education Outreach strives to inspire secondary female school students to take relevant courses and consider future careers involving data science, Artificial Intelligence (AI), and other related areas.
- We particularly encourage younger women and girls to consider these STEM fields by showing examples of successful women in technology roles. In addition, we strive to impress all students that diversity and inclusion are extremely important.
- WiDS for high schools emphasizes the real-world applications, as well as the societal and environmental Impact of data science
- This initiative is aligned with Vision 2030 of KSA and WiDS Education at the University of Stanford, USA.









- -- J 12



# **Certificate Course in Data Science** & Artificial Intelligence



aidalab@psu.edu.sa





# **Proportion of senior female academics**

Proportion of senior female academics Number of senior academic staff Number of female senior academic staff

# **Proportion of senior female academics**

Proportion of female degrees awarded		58.44%
Number of graduates: Total	***	729
Number of graduates by subject area (STEM, Medicine, Arts & Humanities / Social Sciences): Total	***	729
Number of graduates: STEM	***	151
Number of graduates: Medicine	***	0
Number of graduates: Arts & Humanities / Social Sciences	***	578
Number of female graduates by subject area (STEM, Medicine, Arts & Humanities / Social Sciences): Total	****	426
Number of female graduates: STEM	****	54
Number of female graduates: Medicine	****	0
Number of female graduates: Arts & Humanities / Social Sciences	****	372

Reference: Academic Year 2021





# Women's progress measures

# Policy of non-discrimination against women

Accessibility, Non-discrimination, and Harassment Policy; Gender Equality Policy







# Maternity and paternity policies



Articles, 64-65, pp 27, 2019-Faculty Governing Policies and Regulation







# Childcare facilities for students, staff and faculty











# Supporting PSU Female Staff and Students in their Career and Educational Journey by Providing Child **Care Facilities**













# Women's mentoring schemes

Women's mentoring schemes in which at least 10% of female students participate - Academic Advising Handbook



Prince Sultan University



Academic Advising Faculty handbook-Ver1

# Miras (Female Campus Only)

The Miras Program is designed to be the official link between current PSU students and affiliations to provide students with opportunities to gain meaningful experience in their fields of interest. Miras is an Arabic word which means "flexibility and experience". The name was chosen to reflect its objectives.

The purpose of the Program is to provide students with work experience in a professional setting aimed to enhance their academic, professional and personal learnings.

These experiences enable students to apply classroom theory to real-world situations, gain awareness of the professional to real-world situations, gain awareness of the professional expectations in the work environment, identify personal developmental needs and gain insight in their potential career directions.

If you face any problem, please feel free to contact us through E-mail (Miras@psu.edu.sa). Your Email should include an explanation of the nature of your problem along with your name and your student ID. Miras Portal: https://info.psu.edu.sa/pscw/miras/Default.aspx.





# Track women's graduation rate

Have measurement or tracking of women's likelihood of graduating compared to men's, and schemes in place to close any gap.



# Track women's graduation rate

Have measurement or tracking of women's likelihood of graduating compared to men's, and schemes in place to close any gap.



### Prince Sultan University PSU Compliance and Legal Office Compliance Policies

Policy Code:	C0P0008
Policy Name:	Compliance Confidentiality Policy
Hander:	Compilance and Legal Office, Office of the President
Date Created:	33 January 2022
Date of Current Reviews	N/A
Approved by:	Linwently Council
Date of Approval:	25 May 2022









Sustainable
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Clean Water & Sanitation





### **Clean Water and Sanitation**

# Water usage and care:

To ensure clean water supply in the campus and to prevent water loss, PSU performs regular maintenance work to water supply



WWW.psu.edu.sa.





### مذكرة تفاهم

### بين شركة المياه الوطنية والجهات الحكومية والخاصة

#### مقدمة

تهدف شركة المياه الوطنية وهي شركة مساهمة سعودية مملوكة بالكامل للدولة متمثلة في صندوق الاستثمارات العامة تقوم بتقديم خدمات المياه والصرف الصبي وفقاً لأحدث المعاير العالمية، وتسعى من خلال تقديم مبادرة خفض الاستهلاك المياه بالتعاون مع عدد من الجهات الحكومية والخاصة في تنفيذ تجربة تركيب أدوات الترشيد ومراقبة الاستهلاك المياه وتقديم خلاصة النتائج التي تحقق الوفر المالي والمائي لجهات المشاركة عبر عدة مجالات للتعاون:

- دراسة الاستهلاك المياه وتقديم التقييم المبدئي للتجربة.
- تحديد المبائي المستهدفة واختيارها ضمن شروط التجربة.
- تركيب أدوات الترشيد المناسبة للمبانى المستهدفة وفق معايير البيئة العامة للمواصفات والمقاييس.
  - متابعة الاستهلاك وأعداد التقارير اللازمة للتجرية
  - تزويد الجهات المشاركة بالنتائج الهائية لخفض الاستهلاك.
  - مشاركة الإعلامية بين شركة المياه الوطنية والجهات المشاركة.

عن شركة المياه الوطنية عبر خبراتها ومصادرها التقنية والبشرية الى تقديم أفضل الحلول لوقف الهدر
 حقيق الاستدامة وفق رؤية المملكة العربية السعودية ٢٠٣٠م وأهداف البرنامج الوطني ٢٠٢٠م.



# Water in the community

In cooperation with the National Water Company (NWC), PSU signed an MoU to reduce water usage on campus.





Sustainable
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Affordable &
Clean Energy





# Affordable & Clean Energy

Prince Sultan University taken efforts on bringing the environment pollution free and contribute towards climate change. As an important stakeholder, PSU contributes towards the achievement of sustainable cities and communities through various events, practices, and research. It regularly organizes events and exhibitions for students and employees to promote the affordable, clean and sustainable energy for all.

The strong commitment can be witnessed from the type of support provided in events related to clean energy, EV and the sustainable practices followed for sustainable PSU campus to promote renewable energy and energy efficiency, research contribution on microgrid and EV, etc. Moreover, the integration of clean and affordable energy as an important topic is endorsed in our curriculum and outreach.

# Affordable & Clean Energy

Renewable Energy lab, PSU is showing a serious commitment to encourage its researchers to increase their productivity in this field.



# Power electronics for green energy conversion

Mahajan Sagar Bhaskar, Nikita Gupta, Sanjeevikumar Padmanaban, Jens Bo Holm-

Nielsen, Umashankar Subramaniam

Publication date 2022/7/7

Publisher John Wiley & Sons

Description POWER ELECTRONICS for GREEN ENERGY CONVERSION Written and edited by a team of renowned experts, this exciting new volume explores the concepts and practical applications of power electronics for green energy conversion, going into great detail with ample examples, for the engineer, scientist, or student. Power electronics has emerged as one of the most important technologies in the world and will play a big role in the conversion of the present power grid systems into smart grids. Applications like HVDC systems, FACTs devices, uninterruptible power systems, and renewable energy systems totally rely on advances in power electronic devices and control systems. Further, the need for renewable energy continues to grow, and the complete departure of fossil fuels and nuclear energy is not unrealistic thanks to power electronics. Therefore, the increasingly more important role of power electronics in the power sector industry remains paramount. This groundbreaking new volume aims to cover these topics and trends of power electronic converters, bridging the research gap on green energy conversion system architectures, controls, and protection challenges to enable their wide-scale implementation. Covering not only the concepts of all of these topics, the editors and contributors describe real-world implementation of these ideas and how they can be used for practical applications. Whether for the engineer, scientist, researcher, or student, this outstanding contribution to the science is a must-have for any library.





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### IOP Conference Series: Earth and Environmental Science



Hindawi





PAPER . OPEN ACCESS

### https://doi.org/10.1155/2022/9094587 Design and realization of smart e for Standalone PV system

Research Article

International Journal of Photoenerg

Volume 2022, Article ID 9194337, 21 pages

D. Manu<sup>1</sup>, S.G. Shorabh<sup>1</sup>, O.V. Gnana Swathika<sup>1</sup>, S. Um A Practical Approach for Predicting Power in a Small-Scale Off-Grid Photovoltaic System using Machine Learning Algorithms Published under licence by IOP Publishing Ltd.

IOP Conference Series: Earth and Environmental Science, Volu Developments and Innovations (ICSDI-2022) 19/02/2022 - 22/ Citation D. Manu et al 2022 IOP Conf. Ser.: Earth Environ. Sci. 1



References \*

- Hide article information

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#### DOI

https://doi.org/10.1088/1755-1315



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Department of Electrical and Electronics Engineering, Chaitanya Bharathi Institute of Technology (CBIT), Hyderabad 500075, India

Renewable Energy lab, Department of Electrical and Electronics Engineering, KPR Institute of Engineering and Technology, 641407,

Department of Electrical and Electronic Engineering, Bangladesh University, Dhaka 1207, Bangladesh

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Academic Editor: Laurentiu Fara

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Climate change and the energy cris is substantially motivated the use and development of renewable energy resources. Solar power generation is being identified as the most promising and abundant source for bulk power generation. However, solar photovoltase pand is havely dependent on meteorological data of the installation site and weather fluctuations. To overcome these issues, collecting performance data at the remotely installed photovoltaic panel and predicting future power generation is important. The key objective of this paper is to develop a scaled-down prototype of an IoT-enabled datalogger for photovoltaic system that is installed in a remote location where human intervention is not possible due to harsh weather conditions or other circumstances. An Internet of Things platform is used to store and visualize the captured data from a standalone photovoltaic system. The collected data from the datalogger is used as a training set for machine learning algorithms. The estimation of power generation is done by a linear regression algorithm. The results are been compared with results obtained by another machine learning algorithm such as polynomial regression and case-based reasoning. Further, a website is developed wherein the user can key in the date and time. The output of that transaction is predicted temperature, humidity, and forecasted power generation of the specific standalone photovoltaic system. The presented results and obtained characteristics confirm the superiority of the proposed techniques in predicting power generation.

#### 1. Introduction

Renewable or nonconventional sources of energy are something that replenishes itself at the speed of its consumption. Some examples of renewable energy are solar, wind, tidal, waves, and geothermal. Renewable energy ventures are being

undertaken in developed as well as o The majority of the nonconventional to get electricity, which is more efficient, lute the environment, and is costeffection Among all the nonconventional forms of solar energy is most abundantly found



# urnal by MDPI

### ergy Transition, Utilization and Management to

### Message from the Guest Editors

This Special Issue seeks to contribute to the Sustainable Development Agenda through enhanced scientific and multi-disciplinary knowledge for identifying an efficient, economical and effective approach that also promotes environmental goals as well as social equity. We, therefore, invite papers on novel technical developments, reviews, case studies, and analytical as well as assessment papers from different disciplines, which could potentially hasten the progress in sustainability, especially in the energy sector, transportation sector and industrial sector in the context of sustainable energy. Further considerations of the SDG 7 assessment, strategical analysis and policy implications to support energy sustainability will be substantial.











# List of university's achievements to the SDG











**International Webinar on** 

Recent developments in high voltage transmission and Capabilities of GCC Electrical Testing Laboratory



GCC Electrical Testing Laboratory will be a world class Electrical Product Testing and Services Hub in the GCC and MINA region, Independent authority for testing and certificating High-Voltage, Medium-Voltage and Low-Voltage electrical equipment, Act as a third party for failure itigations and arbitration, provide Low Voltage calibration services for electrical equipment and testing tools and certification courses for engineers and technicians.



DR. YASUDEY NAGARAJU



Date: 29th March, 2022



Mr. AbdulRahman Almujahed, 219211224@psu.edu.sa Mr. Mohammed Alghamdi, 219110748@psu.edu.sa

Dr. Mahajan Sagar Bhaskar, smahajan@psu.edu.sa Dr. Dhafer Almakhles, dalmakhles@psu.edu.sa Eng. Sivakumar Selvam, sselvam@psu.edu.sa

Time: 4:30 PM (KSA)



**ICSDI 2022** 

# INTERNATIONAL CONFERENCE ON SUSTAINABILITY: DEVELOPMENTS AND **INNOVATIONS**

February 19 - 22, 2022 - Riyadh, KSA



ON SUSTAINABILITY DEVELOPMENTS AND INNOVATIONS

FEBRUARY PRINCE SULTAN UNIVERSITY RIYADH, SAUDI ARABIA











Transition From Fossil Fuels to Renewables



### International Webinar on Role of Battery Energy Storage Systems in Energy



PROJECTS, Chennal,

Power System is in transition from fossil fuel to renewables for environmental and economic reasons. This Transition results in many challenges to power system design and operation, frequency regulation, Voltage regulation, Generator ramp up / down requirements, Fault withstand capability. Rigidness of the grid, Profestion are few key impacts. There are many Renew alone projects are almed across the world and in such cases the intensity challenges is extremely high. Energy Storage is the best possible option to resolve the issues and selecting the right type of energy storage is the key. Though they are many energy storage options available flattery energy storage system looks technically feasible and commercially viable at this stage. The session address the key challenges along with solution by from Battery Energy Storage, Session also brings out few real time case study eutcome and highlight the simulation requirements at the early stage of the projects to choose the optimal sizing and configuration of



Contact:

Mr. AbdulRahman Almujahed, 219211224@psu.edu.sa Mr. Mohammed Alghamdi, 219110748@psu.edu.sa Dr. Umashankar Subramaniam, usubramaniam@psu.edu.sa

Dr. Mahajan Sagar Bhaskar, smahajanOpsu.edu.sa Dr. Dhafer Almakhles, dalmakhles@psu.edu.sa Eng. Sivekumar Selvam, sselvam@psu.edu.sa

Scan for Registration



المملكة العربية السعودية KINGDOM OF SAUDI ARABIA

Promote pledge on 100 per cent renewable energy (4.6%)





Sustainable
Development
Report 2021-2022
Decent Work
& Economic
Growth





# **Employment practice qualification**

# **Employment practice living wage**

PSU follows the standard national regulations for staff and faculty living wages and pays them more than the expected minimum living wage defined by The Ministry of Human Resources in Saudi Arabia. Minimum wage (defined by Ministry) in Saudi Arabia is SAR 3000-4000. For employees of lowest rank, the monthly salary is at least SAR 6405, for faculty of lowest rank, the starting monthly salary is at least SAR 10750. This is in 100% compliance with the Saudi local living wage laws.



### **Ministry of Human Resources** and Social Development





# **Prince Sultan University**

Faculty SAR 10,750



# Salary Structure of The Faculty Members

Academic Degree	Basic Salary	Transport Allowance	Living Allowance	Specialization Allowance 15% (For Saudis Only)	Social Allowance 15% (For Saudis Only)	
Professor	17000	600	2550	0	2550	
Associate Professor	15000	600	2550	0	2250	
Assistant Professor	13000	600	1950	0	1950	
Lecturer/ Research Assistant	9000	600	1350	1350	1350	
Language Teacher	8000	600	1200	0	0	
Instructor/ Research Assistant	7000	600	1050	1050	1050	

**Salary Structure** of Administrative Staff



Salary slip





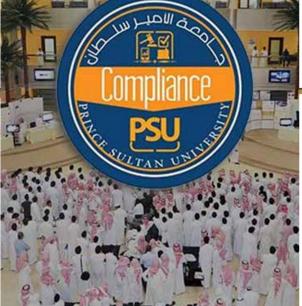


# **Employment practice unions**

PSU recognize and participate with the National Committee of Labor Committees in the Kingdom of Saudi Arabia. Which is formed by election among the heads of the existing committees and consider the main and only reference for the labor committees in the establishments, which represent all workers in the Kingdom.

# PSU Signed an Agreement with L20 as part of G20 and SNC







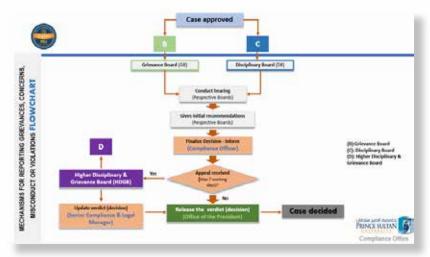






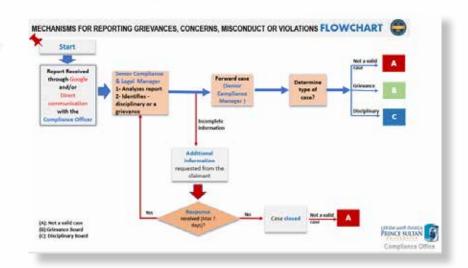
## **Employment policy on discrimination**

PSU is an equal-opportunity institute that strongly prohibits all forms of discrimination based on gender, race, ethnicity, religion, nationality, or disability. I has zero tolerance policy for any kind of discrimination at work. Compliance Office @PSU is established to ensure the institution functions in a legal, professional and ethical manner at every administrative and operational level while meeting its institutional goals and thereby creating and maintaining a healthy and ethical environment for students, faculty, and staff. The PSU stakeholders are committed to uphold and maintain the institutions' reputation to sustain the PSU community and stakeholder's trust.



These issues are followed-up through an e-system either by the Minister or the relevant authorities. PSU has designated one of its employees as a representative who has an access to the Tawasul System and can forward the compliants to the concerned authorities at PSU for immediate action.

"Accessibility, non-discrimination, and Harassment policy".



The faculty, student, and administrative staff are advised to report his/her concerns through an online form about non-compliance with the policies, rules, and regulations at any administrative or operational level; however, the communication is considered confidential irrespective of the outcome of a compliant taking into consideration interest of both parties. In addition to that the Ministry of Education (MoE) has launched an e-service TAWASUL Yesser, which is designed to build communication channels with citizens (including parents, students, faculty, staff) on all issues relating to the education process, including proposals, inquiries, and beneficiaries' complaints.

	Prince Salign University (NO. Pulsay Management System Accordating Non-management System Accordating Non-management systems Accordating Non-management systems	
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Date Contact	Triangue Hotel	# <i>Y</i> ####
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Assessment	Wheel States	<b>*34</b> 4
pens of Appendix.	SALES PLAN	回2分世/20





## **Employment policy modern slavery**

PSU upholds a zero tolerance policy towards modern slavery in all its guises: human trafficking, forced labor, bonded labor and child labor in line with the guiding principle set out by the United Nations, and the workplace regulations established by The Ministry of Human Resources and Social Development. Our policy and practice protects against any violation of human rights and protects the dignity of the individual.

Prince Sultan University PSU Policy Management System		
	Policy against modern slavery, forced labor,	human trafficking, and child labor
Policy Code:	GV0009	
Policy Name:	Policy against modern slavery, forced labor, I	suman trefficking, and child lateor
Handler:	Human recources.	
Date Created:	15 July 2020	国农的基础国
Date of Current Review:	15 August 3026	
Approved by:	University Council	
Date of Approval:	02/09/2020	

## **Employment practice equivalent rights**

Prince Sultan University committed when contracting with third parties that they adhered to Saudi labor rules and regulations and that they provided all rights to their employees. In addition, Articles, 113-114, pp- 32 PSU's Personnel Governing and Regulations booklet (2013). The university makes sure that all employees (faculty and staff) understand the outsourcing work rights, rules and regulations.

## **Employment policy pay scale equity outsourcing**

The Gender Equality Policy of Prince Sultan University ensures that equal compensation is paid fro equal workl to both gendres (male & female). The university human resources department actively ensures equal pay for both genders in faculty and staff.

















## **Employment policy pay scale equity**

The Gender Equality Policy of Prince Sultan University ensures that equal compensation is paid fro equal workl to both gendres (male & female). The university human resources department actively ensures equal pay for both genders in faculty and staff.









## Tracking pay scale for gender equity

00/09/7020

PSU ensures and tracks pay scale for gender equity. Compliance office at PSU regularly conducts audits of salaries to ensure equity of pay between two genders.

Prince Sultan University PSU

Policy Management System Gender Equality Policy		
Policy Code:	040008	
Policy Name:	Gender Equality Policy	
Handler:	The President Office	
Date Created:	% July 2020	
Date of Current Review:	15 August 2020	
Approved by:	University Council	

## Our **Vision**

Date of Approval:

In alignment with Prince Sultan University Vision, the Compliance and Legal Office focuses on ensuring adherence to applicable rules and regulations, and policies while maximizing available resources to support the university goal of providing excellent education, research and community service in a healthy and ethical environment.

## Our Mission

Our Mission is to ensure that policies and procedures are established and implemented, to assist with the application and enhancement of internal checks, and to establish an ethical work environment to contribute to the pursuit of the University's mission.

## Our **Values**

In alignment with the core values of the University, the compliance officer and the compliance committee are led by the following values:

- **Integrity:** Honesty and integrity are shown in our work in our interaction with the University staff
- Accountability: In our action, we will show that accountability is essential for the institution to get people to assume ownership of their actions and to bear consequences for their wrongdoing.
- Fairness: Faculty, students, and staff can raise their issues concerns with a strong belief that their cases will be dealt with professionally and diligently
- Objectivity: We will use our action objective methods to verify the complaints without being influenced in recommending our decision.
- **Consistency:** We will be acting in our hearings according to the policies.
- Knowledge: we try to stay always informed and aware of the major issues raised to improve the performance of the University Management, faculty students, and staff.

## **Our Goals**

- **Planning**
- Management and Administration
- Professional Performance and Development
- Quality Assurance and Development

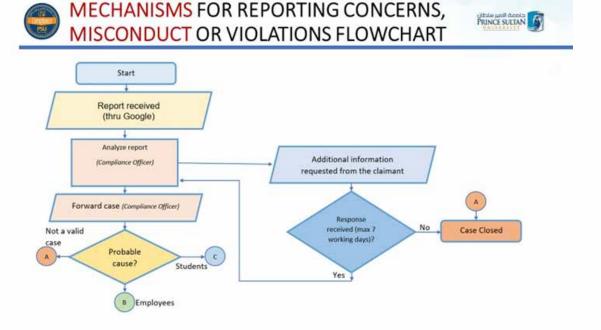




## **Employment practice appeal process**

Prince Sultan University has established a clear mechanism and process for employees to appeal on their pay or any other right (Compliance office).

All employees at Prince Sultan University access the right to a workplace free of harassment and discrimination. PSU first and foremost attempts to ensure such a workplace, while simultaneously acknowledging that certain cases are unavoidable. As such, PSU offers its employees a comprehensive set of policies and procedures that offer mechanisms for employees to raise grievances, including for pay through the channels leading all the way up to the president of the university.

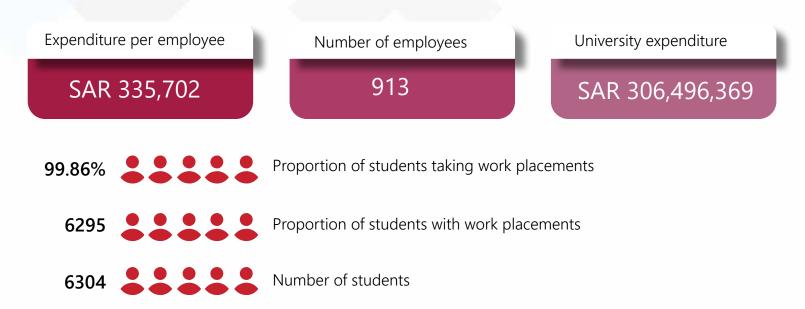


Prince Sultan University – Compliance Office encourages its internal (faculty members, staff, and students) and external (parents, alumni, and employers) stakeholders to report concerns, misbehavior or abuses of the PSU's Code of Ethics and/or other related policies.





## **Expenditure per employee**



Students work placement includes Coop, Internship, Apprentisship and this is an integral part of their degree program. In addition, we have Deloitte Apprenticeship Program which is over and above the 4-7 months of work placement.

## Proportion of employees on secure contracts







Sustainable
Development
Report 2021-2022
Industry,
Innovation &
Infrastructure





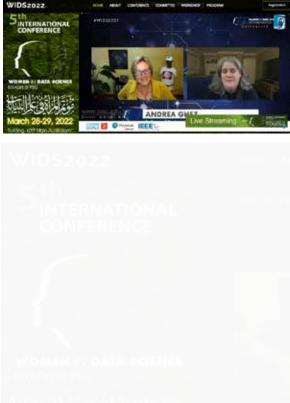
## **Industry, Innovation and Infrastructure**

## **Conferences and Symposia**

PSU organizes a number of conferences and symposia on a yearly basis which enhances collaboration and innovation.













CONNECTING TALENT WITH OPPORTUNITY

#### Join Us for ICSD12022

On behalf of the conference Committees, you are cordially invited to participate in the technical program of the College of Engineering's most dynamic, informative, inspirational, and innovative 2022 event: International Conference on Sustainability: Developments and Innovations in Riyadh, KSA. For two years, we are using our conferences as an opportunity to connect talented people all over the world with decision-makers and limitiess opportunities.





#### **About the Conference**

The 2022 conference focusing on the State of the Art and Practice in different sustainable development goals, join researchers, practitioners, students, and contractors from around the globe. As one of the promising and trending Engineering disciplines, this field is still changing rapidly. Come hear the latest and network with the leaders of our profession, and meet the decision-makers.

Along with the diversity of presentations on challenging projects and research, ICSDI 2022 will feature multiple invited speakers on selected topics. The conference will include a wide-range of knowledgeenhancing technical and panel sessions, short courses, and workshops, join us in Riyadh to share in this celebration of Prince Sultan University (PSU) accomplishments towards SDG's 2030.

#### KEYNOTE SPEAKERS 2022



ASCE





















7th International Conference on Data Science and Machine Learning Applications

Artificial Intelligence Meets Saudi Vision 2030 March 1-3, 2022. Riyadh, Saudi Arabia







## SMARTTECH2022

## THE SECOND INTERNATIONAL CONFERENCE OF SMART SYSTEMS & EMERGING TECHNOLOGIES



22-24 MAY 2022 PRINCE SULTAN UNIVERSITY

#### TRACKS

- 1 Artificial Intelligence
- 2 Internet-of-Things
- 3 Emerging Technologies
- 4 Unmanned Systems
- 5 Communication & Networking
- 6 Cyber-Security

### KEYNOTE SPEAKERS





CHRISTAN CLAUDEL, UNIVERSITY OF TEXAS AT AUSTIN.

#### **GENERAL CHAIRS**

- 1 Anys Koubaa, Prince Sultan University, Saudi Arabia
- 2 Ahmad Taher Azar, Prince Sultan University, Saudi Arabia
- 3 Eric Feron, King Abdullah University of Science & Technology, Saudi Arabia

#### **PROGRAM CHAIRS**

- I Mohamed Abdelkader, Prince Sultan University, Saudi Arabia
- 2 Wadi Boulila, Prince Sultan University, Saudi Arabia
- 3 Adel Ammar, Prince Sultan University, Saudi Arabia
- 4 Muhamad Felemban, King Fahd University of Petroleum & Minerals, Saudi Arabia

#### IMPORTANT DATES

Paper Submission: October 31, 2027

Notification of Acceptance: December 31, 2021

Camera-mady Papers: January 31, 2022

Registration: February 28, 2022

Conference Dates: May 22-24, 2022

#### LINKS

Conference Website: http://imarttech.niotu-ioborg/ Submission via EasyChair. https://kosychoix.org/my/conference?conf-amorttech22













### SESSION 1: Keynote Address



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#### **Organizing Committee**

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School of Electrical Engineering, Department of Electrical Engineering

#### Dr. K. Palanisamy & Dr. R. Sitharthan

School of Electrical Engineering VIT, Vellore, Tamil Nadu, India. e-mail: kpalanisamy@vit.ac.in, sitharthan.r@vit.ac.in Tel: +91 416 220 2467

Mobile: +91 9894718270, +91 9976679826



### Virtual Conference

on

Recent Trends on Renewable Energy, Smart Grid and Electric Vehicle Technologies

9th July, 2020

Organized by



School of Electrical Engineering Vellore Institute of Technology

> In Association with











Rivadh (SA): Umashankar

Rivadh (SA): Sakthivel

(73) Assignoe: Prince Sultan University, Riyadh (SA)

**Publication Classification** 

(21) Appl. No.: 16/798,532

H02M 7/483

H02J 1/10

(51) Int. CL

(22) Filed: Feb. 24, 2020

SUBRAMANIAM, Riyadh (SA):

RATHINASAMY, Riyadh (SA)

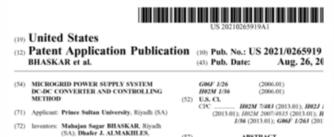
(2006.01)

Sanjeevikumar PADMANABAN,



## **Patents**

PSU welcomes and supports new innovations and patents. Currently, 8 patents have been submitted by PSU. Four of these patents have been granted and registered under PSU.



ADC-DC voltage converter includes an input circi parallel linked leg (P.L.), an output circuit and a ceatar The P.L. lichades an active leg switch, a leg linductor, capacitor and a leg diode. The controller is configured furn on the active input switch and the active leg swit while maintaining the active control of the active is switch and the active leg switch and turn on the a output switch for a second duty cycle period fill burn first duty cycle period. Ill surn off the active of switch shill be active leg switches, and turn on the a output switch for a second duty cycle period following first duty cycle period, and iii) turn off the active of switch shill emaintaining also turn off states of the a input switch and the active leg switches for a remain period following the second duty cycle period. A meth controlling the DC-DC converter includes steps of i) it.



| CHOPPER FOR MILETIE VIL CANCADED | U.S. PATIENT DOCUMENTS | T-BRIDGE INVERTERS | U.S. PATIENT DOCUMENTS | (71) Applicant: Prince Sultan University, Riyath (SA) | 2010/25692 Al | 2/2010 University | (Continued) | (Continued) | (Continued) | (Continued) | (SA) | (Boder Jaher Almaldens, Riyath | (SA) | OTHER PUBLICATIONS | (Continued) |

(21) Appl. No.: 16/733,422

(52) U.S. Cl. CPC .....

Jan. 3, 2020

US 2021/0211066 A1 Jul. 8, 2021

Prior Publication Data

(Continued)

Field of Classification Search CPC — B66B 17423; B66B 11/0226; B66B 7/00; B66B 190; B66B 500 18; B66B 1/302; B66B 1/06; B02M 2007/4835; B02M 3/1584; B02M 7/483; H02M 2001/0225; B02M 3/02; B02M 3/34; B02M 3/10;

H02M 7/53871 (2013.01): H02J 3/381

(2013.01); H02J 7.0048 (2020.01);

(23) Assignee: Prince Sultan University, Riyath (SA)

(\*) Notice: Subject to any disclaimer, the term of this

Primary Examiner — Rexford N Barnie
Assistant Examiner — Ellin Ortiz
(74) Attorney, Agent, or Firm — Oblon, McClelland,
Maier & Neustadt, L.L.P.

(57) ABSTRACT

A cascaded H-ridge (CIBI) inserter for higher rated power conditioning systems which operates at medium voltages while providing high power quality and low dolt. If his incorporating battery energy storage, the power conditioning system operates at stight a provide power to a load or grid and stabilities the system during stoden changes in climatic times of the system during stoden changes in climatic times such as AC side coupled ISS, and chapper based ISS configurations for exacted ISS, and chapper based ISS configurations for conceided ISS and chapper based ISS configurations are parleamed and the configuration on the basis of cost, control complexity, controller barbasis requirements was perferented and few the configurations was demonstrated. A control algorithm for the chapper based configurations was developed to operate the system in standalone and grid-connected modes of operation.

14 Claims, 35 Drawing Sheets









## 

United States

(12) Patent Application Publication (16) Pub. No.: US 2021/0088337 A1 KOUBAA (4) Pub, Date: Mar. 25, 2021

(34) SYSTEM AND METHOD FOR SERVICE ORIENTED CLOUD BASED MANAGEMENT OF INTERNET OF DRONES

(71) Applicant: Prince Sultan University, Risadh (SA)

(72) Inventor: Anta KOUBAA, Rivedy (SA)

(75) Assignce: Prince Sultan University, Rivadh (SA)

(21) Appl. No.: 16/790,233

(22) Filed: Feb. 13, 2020

#### Related U.S. Application Data

(60) Provisional application No. 62/903-277, filed on Sep.

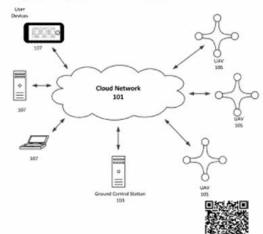
#### Publication Classification

Int. CL	
G81C 21/28	(2005.01)
11941, 29:00	(2006.01)
IIN4L 29/12	(2006 BT)
G88G 5/88	(2006.01)
G88G 5/84	(2006.01)
B64C 1982	(2005.01)
GASD LINE	(2006.01)
G85D 1/18	(2006.01)

GRIC 24/29 (2013.01); IBML 45/19 (2013.01); H84L 67/2 (2013.01); H84L 64/2007 (2013.01); H84L 67/06 (2013.01); G86G 54009 (2013.01); B84D 47/09 (2013.01); B64C 28/024 (2013.01); G85D LOW22 (2013/01): GRSD 1/1064 (2019/05): 864C 2701-027 (2013.01); 864C 7201/126 (2013.01); 864C 2201/146 (2013.01); G00G 504S (2013.01)

#### ABSTRACT

A Internet protected-based unmanned perial vehicle (UAV) A human promote-based sugnatured social veltacle (UAV) assugament system and models in disclosed that includes UAVs including a occurrent/survivo chip, a now computer, a cloud-based sovice for performing a witnut UAW. The nethod includes storing a plansity of pre-planned missions, controlling commercial triple where the UAW and the unce computer, supplying the UAW to the virtual UAW, meigring a mission to include multiple wayyours, and allocating the task at the multiple waypoints. Dynamic mission planning of the saugued mission is performed to generate planned parti-for performing the task. Operation of the UAV is controlled. by way of the corresponding virtual UAV including receiving messages and commands for the mission from the user computer, sending centrel commands to the UAV, receiving data signos from the UAV, and transmitting kecition and status of performance of the task for the UAV. The cloud-based service performs image processing using the received data signals.



## 

(12) United States Patent Koubaa et al.

(54) SYSTEM, APPARATUS, AND METHOD FOR CONTROLLING UNMANNED AERIAL VEHICLES FOR SEARCH AND RESCUE

(71) Applicant: Prince Sultan University, Riyadh (SA)

(72) Inventors: Anis Koubau, Riyudh (SA); Ebtehal Turki Aletaibi, Riyadh (SA); Shahad Saleh Algefari, Riyadh (SA)

(73) Assignee: Prince Sultan University, Riyadh (SA)

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 289 days.

(21) Appl. No.: 16/740,042

(22) Filed: Jan. 10, 2020

Prior Publication Data US 2021/0216069 A1 Jul. 15, 2021

(51) Int. CL G05D 1/00 H04L 67/10 (52) U.S. Cl.

CPC ...

(2022.01) (Continued)

G05D L0027 (2013.01); B64C 39/024 (2013.01); G05D 1/104 (2013.01); H04L 67/10 (2013.01); H04W 4/90 (2018.02); B64C 2201/027 (2013.01); B64C 2201/126

(2013.01); B64C 2201/143 (2013.01) (58) Field of Classification Search . 701/20, 3, 50, 101; 340/902 See application file for complete search history.

(56)References Cited

U.S. PATENT DOCUMENTS

11/1998 Pedersen et al. 2/2019 Kurdi et al. (Continued)

(10) Patent No.: US 11,334,065 B2 (45) Date of Patent: May 17, 2022

FOREIGN PATENT DOCUMENTS

107943067 A 4/2018 CN

OTHER PUBLICATIONS

Sujit, P. B., & Ghose, D. (2004). Search using multiple UAVs with fight time constraints. IEEE Transactions on Aerospace and Electronic Systems, 40(2), 491-509. doi:10.1109/taex.2004.1310000 (Year

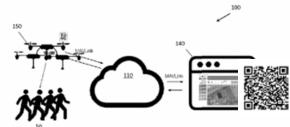
(Continued)

Primary Examiner - Elgine Gort Assistant Evanginer - Ellis B. Ramirez (74) Attorney, Agent, or Firm - Oblon, McClelland, Maior & Neustadt, L.L.P.

ABSTRACT

A system, method, and non-transitory computer-readable storage medium to perform a search and rescue mission according to a Layered Search and Rescue (LSAR) methedelogy using a plurality of Unmanned Aerial Vehicles (UAVs) communicatively connected to a remote server. The LSAR methodology can involve receiving data corresponding to a center of an area corresponding to an adverse disaster event potentially having survivors at unknown locations; dividing the area into a set of numbered box-shaped layers within the area; calculating a thickness of the boxshaped layers based on a total number of the Unmanned Aerial Vehicles; exclusively assigning one or more of the Unmanned Aerial Vehicles to each box-shaped layer, and controlling the Unmanned Aerial Vehicles to perform the search and rescue mission by selectively switching one or more of the Unmanned Aerial Vehicles between a searcher mode and a rescuer mode.

20 Claims, 10 Drawing Sheets





(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2021/0209956 A1 Allouche et al.

Jul. 8, 2021 (43) Pub. Date:

(54) BLOCKCHAIN-BASED SOLUTION FOR INTERNET OF DRONES SECURITY AND PRIVACY

(71) Applicant: Prince Sultan University, Riyoth (SA)

(72) Inventors: Azza Alleuche, Rivudh (SA); Anis Koubus, Riyadh (SA); Mohamed Khalgui, Riyadh (SA); Omer Cheikhroubou, Riyadh (SA)

(73) Assignee: Prince Sultan University, Riyadh (SA)

(21) Appl. No.: 16/733,451

(22) Filed: Jun. 3, 2020

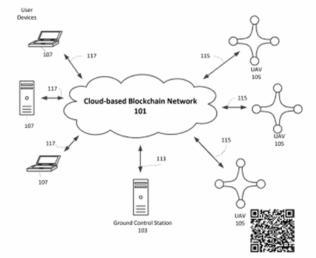
#### **Publication Clawification**

(51)	Int. Cl.	
	G88G 5/80	(2006.01)
	H04L 29/06	(2006.01)
	H04L 29.08	(2006.01)
	G85D 1/80	(2006.01)
	B64C 39/02	(2006.01)
	G86F 16/23	(2006.01)

(52) U.S. CL CPC ...... GWG 5-0095 (2013.01); Hotal 67/07 (2013.01); Hotal 67/097 (2013.01); GWD L/0011 (2013.01); H04L 67/02 (2013.01); G08G 5/0069 (2013.01); G08G 5/0013 (2013.01); G06F 16/2379 (2019.01); B640 39/024 (2013.01)

ABSTRACT

A secure system for control of at least one unmanued serial vehicle (UAV), includes a cloud service and a ground control station. The cloud service includes a cloud-based management service having processing circuitry configured to control communications between the cloud service, the ground control station and the at least one UAV, and control and monitor the at least one UAV by way of a corresponding at least one UAV client device. The UAV client device receives messages from the at least one UAV, sends com-mands to the at least one UAV, verifies the sender of each of the received messages, creates a new block for each received message and sent commands as new transactions, including performs a consensus algorithm for the new block, deter mines a consensus to validate the new block, and updates a blockchain with the validated new block.









(12) United States Patent

(54) TABU NODE SELECTION WITH MINIMUM SPANNING TREE FOR WSNS

(71) Applicant: Prince Sultan University, Riyodh (SA)

(72) Inventor: Mohamed Toursi, Riyadh (SA)

(73) Assignce: Prince Sultan University, Riyadh (SA)

(\*) Notice: Subject to any disclaimer, the term of this ent is extended or adjusted under 35 U.S.C. 154(b) by 46 days.

(21) Appl. No.: 16/729,893

(22) Filed: Dec. 30, 2019

Prior Publication Data 

(51) Int. Cl. H04W 40/10 H04W 84/18 (2009.01) (2009.01) H04W 40/24 (2009.01) H04W 4/38 (2018.01) (Continued)

(52) U.S. CL

HOUR 40/10 (2013.01): HOUL 45/127 (2013.01); H84L 45/48 (2013.01); H84W 4/38 (2018.02); HOAW 40/246 (2013.01); HOAW 49/28 (2013.01); H04W 84/18 (2013.01)

(58) Field of Classification Search CPC .... H04W 40/00-10; H04W 40/24-32; H04W 4/30-48; H04W 84/18-22; H04W 52/04; H04W 52/06; H04W 52/18; H04W 52/38;

H04L 12/462; H04L 45/00; (Continued)

(45) Date of Patent: References Cited

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1/2007 Garcin-Luxu-Acover et al. 7,199,005 BZ \* 4/2011 Riga -

(10) Patent No.: US 11,102,698 B2

Aug. 24, 2021

(Continued)

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(Continued)

OTHER PUBLICATIONS

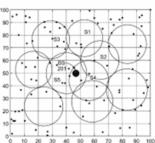
Ada Gogu, et al., "Review of Optimization Problems in Wireless Sensor Networks\*, Telecommunications Networks-Current Status and Fature Trends, www.intechepen.com, Chapter 7, 2012, pp.

Primary Euswiner - Womer Wong (74) Attorney: Agent, or Firm — Obion, McClelland, Maier & Neustadt, L.L.P.

ABSTRACT

A wireless sensor network node selection that efficiently manages active nodes using a Tabu heuristic coupled with minimum spanning tree routing protocol (TNS-MST) is presented. Nodal energy consumption is balanced to ensure all nodes are operating at the same energy level. To balance the energy consumption, nodes with high energy depletion are removed from routing by placing on them a Tabu list, which prevents the most used nodes, such as nodes close to a bose station, from draining before their neighbors. The nodes in the Tabu lists are dynamically active according to the energy level of neighboring nodes. The Tabu list com-bined with Minimum Spanning Tree routing protocol, TNS-MST, greatly increases network lifetime by optimally balancing the energy of the sensor nodes.

18 Claims, 21 Drawing Sheets





(12) United States Patent Al-Matouq

(54) ESTIMATION OF GLUCOSE RATE OF APPEARANCE, ENDOGENOUS GLUCOSE PRODUCTION AND INSULIN DEPENDENT GLUCOSE UTILIZATION FROM CONTINUOUS GLUCOSE SENSORS AND SUBCUTANEOUS INSULIN DELIVER

(71) Applicant: Prince Sultan University, Riyadh (SA)

(72) Inventor: Ali Ahmed Al-Matouq, Riyada (SA)

(73) Assignce: Prince Sultan University, Riyodh (SA)

Subject to any disclaimer, the term of this potent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 15/974,451

(22) Filed: May 8, 2018

(51) Int. CL G16H 50/50 A61B 5/00 (2006.01) A61M 5/172 (2006-01)

(52) U.S. CL

G16H 50/50 (2018 01): 46IB 5/14532 (2013.01); A61B 5/4839 (2013.01); A61B 5/9062 (2013.01); A61B 5/7271 (2013.01); A61M 5/1723 (2013.01); A61M 2205/32 (2013.01)

(58) Field of Classification Search CPC .. G16H 50/50; A61B 5/14532; A61B 5/4839;

A61B 5/0002; A61B 5/7271; A61M 5/1723; A61M 2205/52

. 340/573.1: 604/506: 600/365 See application file for complete search history.

(45) Date of Patent: May 21, 2019

U.S. PATENT DOCUMENTS 2009/0006133 AL\* 1/2009 Weinert ...... A61B 5/14532 604504 G16H 2010 2015/0359966 AL\* 12/2015 Day ... 2016/0354543 AI \* 12/2016 Cinor ...... A61M 5/1723

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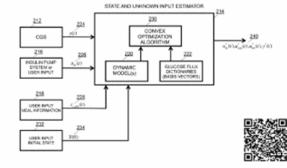
(10) Patent No.: US 10,297,353 B1

Primary Examiner - Jack K Wang (74) Awarney, Agent, or Firm — Steven M. Shape, Demenseyer & Associates, LLC

ABSTRACT

Method and system for determining glucose flux profiles in plasma during meals using continuous glucose sensors and insulin delivery. A database of plausible glucose flux profiles is encoded in dictionaries using sparse dictionary learning. A constrained Lasso minimization problem is formed that integrates a transport model for a patient with the dictionaries for estimating the glucose fluxes. Meal carbohydrates consumed by a potient is incorporated in the minimization problem through convex constraints. The estimated glucose fluxes resulting from solving the constrained Lason minimization problem are glucose rate of appearance from the intestine, endogenous glucose production from the liver and insulin dependent glucose utilization. A method for determining patient carbohydrate to insulin ratio at the time of the med by calculating the area under the curve of the estimated insulin dependent alucose utilization

16 Claims, 7 Drawing Sheets



(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau

(43) International Publication Date 31 August 2017 (31.08.2017) WIPO | PCT



English

(10) International Publication Number WO 2017/145119 A1

(51) International Patent Classification:

A618 5/09 (2006:01) G06F 79/99 (2011.01) 461B 5/145 (2006.01)

(21) International Application Number: PCT/IB2017/051100

(22) International Filing Date:

24 February 2017 (24.02.2017) (25) Filing Language

(26) Publication Language:

45119

(M) Priority Data: 62/300,426 26 February 2016 (26.02.2016)

62/300,438 26 February 2016 (26.02.2016) US (71) Applicants KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY [SA/SA]: 4700 King Abdullah University of Science and Technology, Thuwal 23955-6900 (SA). PRINCE SULTAN UNIVERSITY [SA/SA]; Mansur Ibn Muhammad, Salah Ad Din, Risadh

(72) Inventors: LALEG, Tuous Merlem; 4700 King Abdullah University of Science and Technology, Thuwal 23955-6500 (SA). AL-MATOUQ, All Ahmed; Mansur Bu Published: Muhammad, Salah Ad Din, Riyadh 12435 (SA).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY,

TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN ZA, ZM, ZW. English (84) Designated States (unless otherwise indicated, for every tind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE,

DK, EE, ES, FL FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CL, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

with international nearth report (Art. 21(3))

(54) Title: ESTIMATION OF GLUCOSE RATE OF APPEARANCE FROM CGS AND SUBCUTANEOUS INSULIN DELIV-

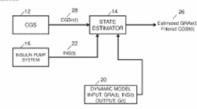


FIG. 1



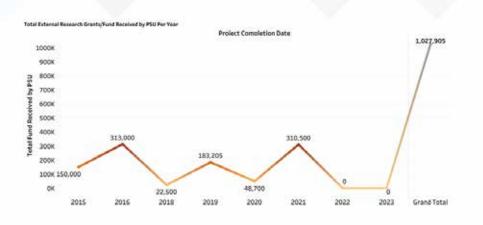
(57) Abstract: Method and System for providing estimates of Glucose Rate of Appearance from the intestine (GRA) using continu ous glucose sensor measurements (CGS) taken from the subcutaneous of a diabetes patient and the amount of insulin administered to 80 the petient.

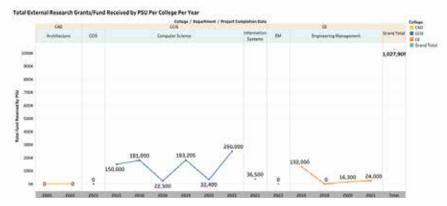




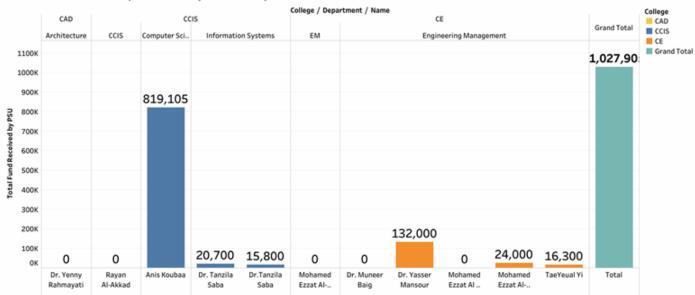
## **External grants**

PSU faculty were able to secure external grants from academia and industry.





#### Total External Research Grants/Fund Received by PSU Per Faculty Member







### **Innovation**



RIC launched the business incubator program. A memorandum of understanding was signed with i-be Business Hub in September to encourage entrepreneurship among students. Two startups are enrolled in the program.

Source: 2021 RIC report

## **Collaboration with industry**

Trimble Signs MOU with Prince Sultan University (Oct. 2021)

## Trimble Signs MOU with Prince Sultan University



TRM®) have recently signed a memorandum of understanding (MOU). The purpose of this MOU is to set forth increased collaboration and cooperation between the College of Engineering at PSU and Trimble to educate the students with advanced 3D BIM Tekla Solutions used in the construction world.

## **VMware MoU Ceremony**



## Signing of a cooperation agreement between Prince Sultan Schneider Electric University







Sustainable
Development
Report 2021-2022
Reduced
Inequalities





## **Research Policy**

## PRINCE SULTAN UNIVERSITY PSU POLICY MANAGEMENT SYSTEM RESEARCH POLICY

Policy Code:	RS0001	
Policy Name:	Research Policy	
Handler:	The Research and Initiatives Center	
Date Created:	15 August 2020	
Date of Current Review:	15 August 2020	回線
Approved by:	University Council	
Date of Approval:		
		(L) + 344



## **Research and Initiatives**

## **GOAL 1**

Establish an effective research infrastructure

To expand research facilities and resources

## **GOAL 2**

Provide professional development opportunities for academic and administrative leaders

- To enhance the quality, quantity and impact of research
- To strengthen research collaboration nationally and internationally
- To promote the involvement of undergraduate and postgraduate students in research
- To publish and maintain PSU Research Review

## GOAL 3

Contribute to the socioeconomic development of the Kingdom of Saudi Arabia through research and Innovation

- To contribute to the Saudi Arabia Vision 2030 through PSU research activities
- To attract funding opportunities that support innovative ideas and research





### **Events**



The United Nations Global Compact Network - Saudi Arabia, and Saudi Arabia's Prince Sultan University (PSU), signed a memorandum of understanding to form a strategic partnership to advance the UN's 2030 Agenda











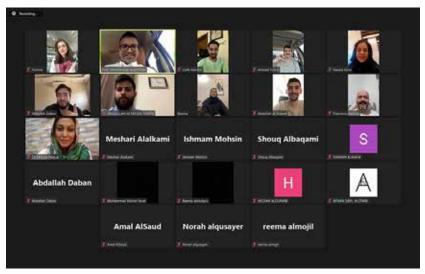




## More than 100 Students Joined Prince Sultan University SDG Club to Take Part of Impactful Initiatives













Sustainable
Development
Report 2021-2022
Sustainable
Cities &
Communities





### Sustainable cities

## Support of arts and heritage

To promote and support Arabic language PSU organizes an award for translating books on a yearly basis. Faculty from all Saudi universities can participate. A similar award is also announced for students.



## جائزة جامعة الأميير سلطان للترجمة لأعضاء هيئة التدريس للعام الأكاديمي 2021-2022

### PRINCE SULTAN UNIVERSITY TRANSLATION AWARD

for Faculty Members for the Academic Year 2021 - 2022

- . The applicant should not have received a previous grant or award for the work applied for, and provide proof of that
- has not been published and does not have prior copyrights. The university may publish the book according to the recommandations of the aginions of the referens and committee members.
- . The applicant should be faculty member at one of . See Jugal. August Jugal pick as Spirit in the second s the Soudi university. holding a PhD degree in any بقة عالمكاورة الدكاورة الدكاورة عن دملة درجة الدكاورة
- ه الا يكون المقادم قد ذهل علاء منجة أو جائزة سابقة عن العمل المتقدم به وتقديم ما يثبت ذلك حكوف نشر مسيقت وجمكن للجامعة نشر الكتاب حسب توصيات اراء المحكمين واعضاء اللجنة

progulated fluorist peligia wise trappopul tytiget tiseld sins y thriti For name efformation shoul the nevert, please visit the link https://www.psu.edu.sa/ar/TAC-award

For more information about the application requirements and to fill out the application form please visit the following link



الاطلام على شروط الشوم وتعبنة استعارة طلب التقديم يوجبت زيسارة الرابسط الثالي

## Saudi National Day celebrations: **PSU** celebrates the Saudi National Day



ملحق خاص عن اليوم الوطني (10 -16)



Source: Taif issue 251





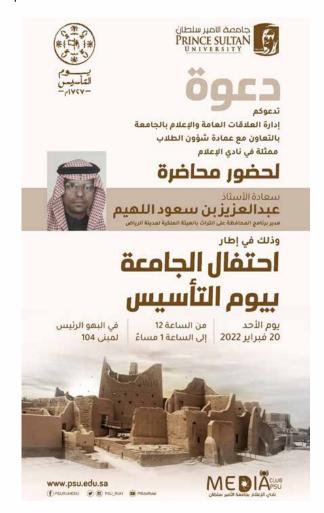
## **Poetry competition**

PSU organized a poetry competition on the occasion of the Saudi national day



## **Culture preservation**

To promote the preservation of Saudi culture, the public relations center organized a lecture by the director of culture preservation.







## **Sustainable practices**

## Promote sustainable commuting:

PSU provides bus shuttles from and to faculty housing.



## Planning development - new build standards

Green building forum







## Planning development - new build standards

News article: The College of Architecture and Design at Prince Sultan University has a sharp focus on national and global sustainability goals, with students and researchers embedding this in their work from inception to creation.



**Climate week:** Net Zero Emission and Transition Towards Climate-Neutral Economies: The Role of Higher Education and Saudi Vision 2030





Visiting the Exhibition of Projects of Distinguished Cities During the Reign of the Custodian of the two Holy Mosques King Salman bin Abdul Aziz 2022







Sustainable
Development
Report 2021-2022
Responsible
Consumption
& Production





# Policy Management System - Sustainable Ethical Food Sourcing Policy

	Prince Sultan University PSU	
	Policy Management System	
	Sustainable Ethical Food Sourcing Policy	
Policy Code:	GV0015	
Policy Name:	Sustainable Ethical Food Sourcing Policy	
Handler:	PSU Catering Services Unit	
Date Created:	15 July 2020	
Date of Current Review:	15 August 2020	
Approved by:	University Council	
Date of Approval:	02/09/2020	

Prince Sultan University is the First Saudi University to Pledge Net Zero Carbon University by 2060Food Sourcing Policy

## Official Race to Zero Signatory

We are part of the Race to Zero and are leading the education sector for a healthy and resilient zero carbon recovery in the lead up to COP26!









**Race To Zero** is a global campaign to rally leadership and support from businesses, cities, regions, investors for a healthy, resilient, zero carbon recovery that prevents future threats, creates decent jobs, and unlocks inclusive, sustainable growth.



Institutions involved



10,634,957

Students represented

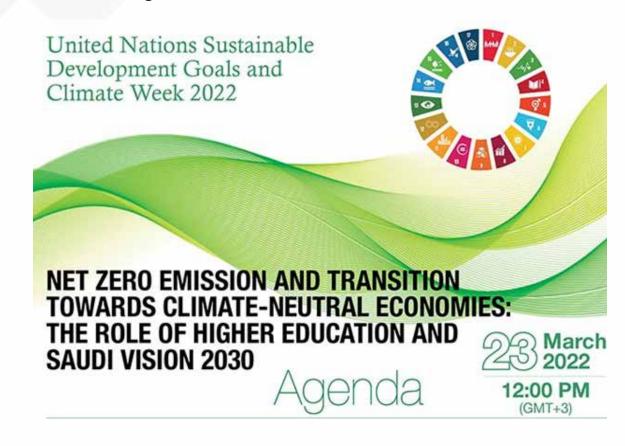




PepsiCo's Food for Thought in Partnership with Prince Sultan UniversityPrince Sultan UniversityFood Sourcing Policy



Net Zero Emission and Transition Towards Climate-Neutral Economies: The Role of Higher Education and Saudi Vision 2030 Event







PepsiCo partners with Prince Sultan University to educate youth on sustainability



**International Conference on Sustainability: Developments** and Innovations











## International Webinar on Role of Battery Energy Storage Systems in Energy Transition From Fossil Fuels to Renewables











### International Webinar on Role of Battery Energy Storage Systems in Energy **Transition From Fossil Fuels to Renewables**



Eng. Selvakumar **Business Head at POWER** PROJECTS, Chennai, Tamilnadu, India

Power System is in transition from fossil fuel to renewables for environmental and economic reasons. This Transition results in many challenges to power system design and operation. Frequency regulation, Voltage regulation, Generator ramp up / down requirements, Fault withstand capability, Rigidness of the grid, Protection are few key impacts. There are many Renew alone projects are aimed across the world and in such cases the intensity challenges is extremely high. Energy Storage is the best possible option to resolve the issues and selecting the right type of energy storage is the key. Though they are many energy storage options available Battery energy storage system looks technically feasible and commercially viable at this stage. The session address the key challenges along with solution by from Battery Energy Storage. Session also brings out few real time case study outcome and highlight the simulation requirements at the early stage of the projects to choose the optimal sizing and configuration of



- Mr. AbdulRahman Almujahed, 219211224@psu.edu.sa
- Mr. Mohammed Alghamdi, 219110748@psu.edu.sa
- Dr. Umashankar Subramaniam, usubramaniam@psu.edu.sa
- Dr. Mahajan Sagar Bhaskar, smahajan@psu.edu.sa
- Dr. Dhafer Almakhles, dalmakhles@psu.edu.sa
- Eng. Siyakumar Selvam, sselvam@nsu.edu.sa



Scan for Registration

## Principles of green construction design







## **Recycling Presentation**



## The Climate Crisis and our Future

PRINCE SULTAN



In collaboration with College of Law.

Teaching and Learning Center invites you to attend

webinar about

## The Climate Crisis and our Future.

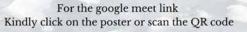
Presented by: Mr. Ahmad Rafay Alam



Mr. Ahmad is a Pakistani environmental lawyer and partner at Saleem, Alam & Co. a law firm.

A Yale World Fellow, Mr. Alam has vast experience in environmental law, litigation and regulation and regularly advises governments, international financial institutions and NGOs on environment, water, sustainability, climate change, energy and air quality issues.

Sunday 6/3/2022 12:00 - 1:00 pm

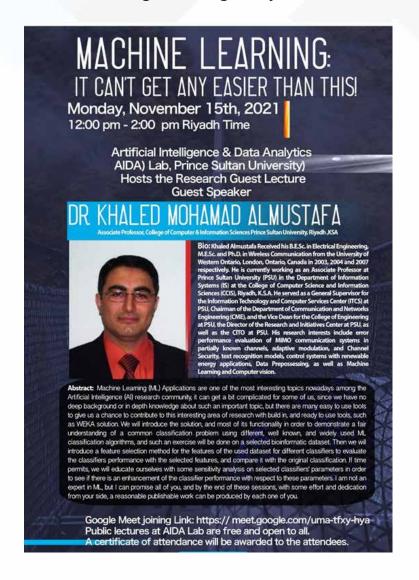








## Machine Learning: it can't get any easier than this



## Plastic Recycling Program - 09/03/2022



If you are interested in being part of a green university's environment and concerned about plastic pollution! Come to join us in kicking off the recycling program at PSU



AQUAFINA.



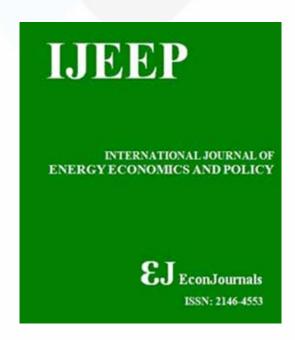
(L): 12:30 - 1:30 PM.

P: Building 105
Auditorium





## **Publications**















International Journal of
Interactive Mobile Technologies







# WILEY



# emerald insight













## ScienceDirect







































Sustainable
Development
Report 2021-2022
Climate Action





### **Climate Action**

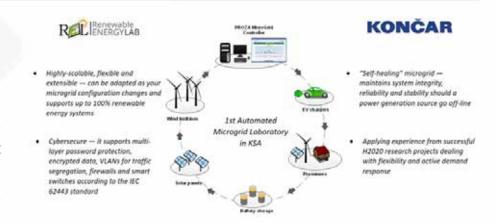
### **Summary of accomplishments**

Prince Sultan University giving much attention on bringing the environment pollution free and contribute towards climate change. As an important stakeholder, PSU contributes towards the achievement of sustainable environment and campus through various events, practices, and research. It regularly organizes events and exhibitions for students and employees to promote the climate change.

The strong commitment can be witnessed from the type of support provided in events related to clean energy, EV and the sustainable practices followed for sustainable PSU campus to promote measures for climate change and research contribution etc. Moreover, the solutions and impacts of climate change is an important topic is endorsed in our curriculum and outreach.

### **Summary of accomplishments**

The **Prince Sultan University** is involved in several industrial collaborations that are leading the way in the search for alternative energy sources. One such example comes from our **Renewable Energy Lab**, who are in cooperation with **Koncar Power Plant Electric Traction**, **Croatia** for a collaborative project on microgrids test bench for EV charging and renewable energy to combat climate change.



The Prince Sultan University is involved in several industrial collaborations that are leading the way in the search for alternative energy sources. One such example comes from our Renewable Energy Lab, who are in cooperation with Power and Telecom Technologies Co., KFB Holding Group, Riyadh for a collaborative consultancy project on investigations on minimizing electricity cost and feasibility study of self-sustainable campus towards climate change mitigation.

- Introducing custom made techniques for local environment conditions, like robotic panel cleaning etc. as per the SDG 9, 13.
- Setting up a remote monitoring and control station at Renewable Energy Lab for the performance analysis of installed lights.







### **Research on Climate Action**

10P Publishing Series: Earth and Environmental Science 1026 (2022) 012029 doi:10.1088/1755-1315/1026/1/012029

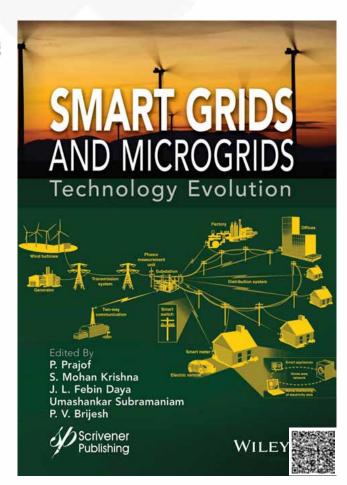
### Energy Efficient Outdoor Lighting System Design: Case Study of IT Campus

O.V.Guana Swathika 12, K. Karthikeyan J. Umashankar Subramaniam K.T.M. Udayanga Hemapala' and Sagar Mahajan Bhaskar?

School of Electrical Engineering, VIT Chennai, India Larsen & Toubro Pvt. Ltd. India Department of Communications and Networks, Renewable Energy Laboratory, College of Engineering, Prince Sultan University, Riyadh 11586, Saudi Arabia 2 University of Monatorea, Sri Lanka \* grunnwathika avij(vitac in

Abstract. Outdoor lighting solutions are a key to safe urbanization. It is important that assessment of lighting is done at the decign stage keeping in mind the crucial parameters like consistential friendly design, light pollution, and entrage efficiency. These crucial parameters are met by meticulously using lighting standards at each and every stage of lighting design. This process forther numerally inclines in realizing nutainable lighting solutions for the future generation. In this paper, a case study of an Information Technology (IT) campus which requires untained conduce lighting systems is considered. Oxfood lighting in vivey exactrial from the society perspective and also for the people and vehicle movement during night time Hence it is necessary to design and implement an effective lighting sch is necessary to perform extensive lighting calculations and simulation platform.





### HOSTEGUY



### Alexandria University

Alexandria Engineering Journal



### Solar PV network installation standards and cost estimation guidelines for smart cities



Sushmita Sarkar\*, M.S. Bhaskar b., K. Uma Rao\*, Prema V\*, Dhafer Almakhles\*, Umashankar Subramaniam

- \*Dispursment of Energical and Electronics Engineering, RV College of Engineering\*, Bangahera 500059, India Renewable Interp Lab, Department of Communications and Networks Engineering, College of Engineering, Prince Studies University, Equals 1750s, Small Arabia
- Department of Electrical and Electronics Engineering, R.M.S. College of Engineering, Bongahra 560019, India

Rossovad 5 March 2021, revised 30 April 2021, assopted 27 June 2025. Available online 7 July 2001

### KEYWORKS

International Electroneche cal Commission (RIC); Quality orthloxios;

Absence. For years cities, the second's large scale implementation of solar PV technology, Quality Cortification and Standards are mandators. The International Electrosychiacal Commission (BC) is a plobal organization for standardization committing of all BC national committees. The BECPV numberals comprise BC national committing Exaster PV Energy System (BECPES) which develops and adopts all Photosoltaic related standards. There are nearly 80 standards applicable to photovoltas and five working groups in IEC TGS2. For increasiny sality experiments Quality and Standards' technologically need to be revised and up to date. This paper prounts PV standards developed by curious technical committees workbook, mainly facusing on curious IEC PV stan-dards, gaps identified by them and the recommendations provided by the core

The breakup costs of the various sub-systems of a PV installation with an i-ltalla is also discussed. It is intended to provide a patieline for commerce as





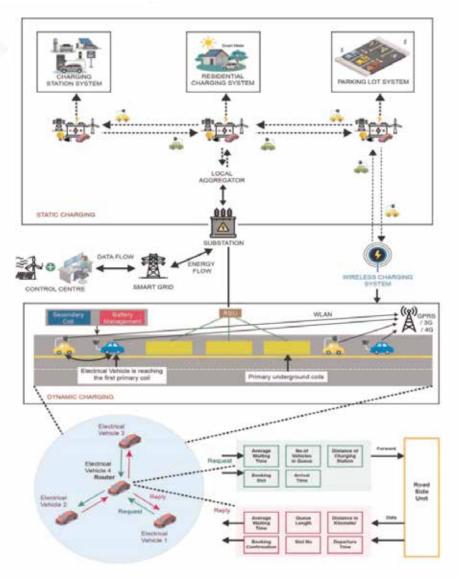


# Low-carbon energy use (27%)

The **Prince Sultan University** is involved in several industrial collaborations that are leading the way in the search for alternative energy sources. One such example comes from our Renewable Energy Lab, who are in cooperation with Power and Telecom Technologies Co., KFB Holding Group, Riyadh for a collaborative consultancy project on investigations on minimizing electricity cost and feasibility study of self-sustainable campus.

The main objective of the project is to study PSU Lighting electricity network to provide Strategic solutions as per the sustainable development goals (SDG 12, 13, 17)

- Introducing custom made techniques for local environment conditions, like robotic panel cleaning etc. as per the SDG 9, 13.
- Setting up a remote monitoring and control station at Renewable Energy Lab for the performance analysis of installed lights.



Intelligent optimization for charging scheduling of electric vehicle





### **Environmental education measures (23%)**

### Virtual Conference on Energy, Smart Grid and EV:

Renewable Energy Lab (REL), College of Engineering, Prince Sultan University is organized International Virtual Conference on Recent trends on Renewable Energy, Smart Grid, and Electric Vehicle Charging (RESGEVT-20) on 9th July 2020 as a partner Institution in association with Top ranking universities in the world . VIT University Vellore India is hosting this conference. The Virtual Conference is a platform for researchers, academicians as well as professionals from all over the world to present, discuss and promote the knowledge, research and practice in the field of Smart Grid Control, Renewable Energy Sources, Energy Efficiency, Power Quality and Electric Vehicle Charging to combat climate change.

RESGEVT-20 is offering a fantastic opportunity to attend a global scientific forum from the convenience of your desktop. The conference is online, from paper submission, including reviewing, conference discussion, and post-conference processing. All papers referred to the double tier approval process, single-blind peer-review and regular check. The online conference is a smart and affordable manner of presenting research results.

Selected papers based on the domain and quality published in Scopus Indexed conference proceedings (IOP Conference Series).

Community Event on Wind Energy to the Students, Researchers of Kingdom by REL







Sustainable
Development
Report 2021-2022
Life Below
Water





### **Life Below Water**

Supporting aquatic ecosystems through education

Fresh-water ecosystems (community outreach)

Offer educational programs on fresh-water ecosystems (water irrigation practices, water management/conservation) for local or **national** communities

Course: CEE 442 Environmental Management

CEE 441 Energy Resources Management

CEE 442 Environmental Management

CEE 443 Leadership in Energy and Environmental Design (LEED)

CEE 444 Solid Waste Management

CEE 446 Air Pollution Management

CEE 447 Groundwater Engineering

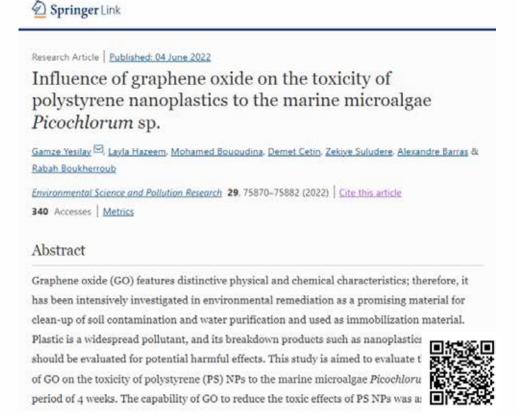


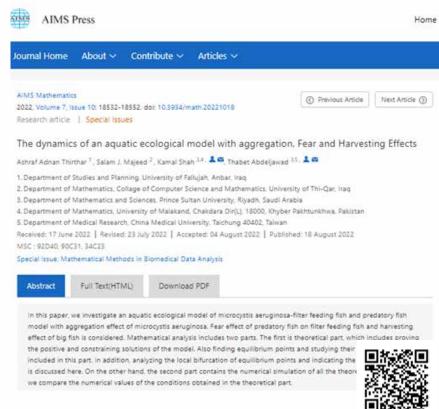


# Supporting aquatic ecosystems through action

### Maintain ecosystems and their biodiversity

Work directly (research and/or engagement with industries) to maintain and extend existing ecosystems and their biodiversity, of both plants and animals, especially ecosystems under threat





# Technologies towards aquatic ecosystem damage prevention

Work directly (research and/or engagement with industries) on technologies or practices that enable marine industry to minimise or prevent damage to aquatic ecosystems.

Hindawi Journal of Nanomaterials Volume 2022, Article ID 1458442, 14 pages https://doi.org/10.1155/2022/1458442



### Research Article

# Efficient Removal of Cd (II) from Aquatic Media by Heteronanostructure MgO@TiO<sub>2</sub>@g-C<sub>3</sub>N<sub>4</sub>

A. Modwi 0, 1 M. Ismail, 1 H. Idriss, 2 M. A. Ben Aissa 0, 1 L. Khezami 0, 3 and M. Bououdina 0, 4

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Received 12 May 2022; Accepted 15 July 2022; Published 5 August 2022

Academic Editor: Haisheng Qian

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MgO@TiO\_@g-C\_3N\_4 heteronanostructure was synthesized using a simple ultrasonication technique and assessed potentially to remove Cd (II) from aqueous environments. X-ray diffraction analysis confirms composite formation with mean crystallite size in the range of 4-17 nm while transmission electron microscopy analysis reveals nanosheet-like nanoparticles with the homogeneous elemental distribution. N<sub>2</sub> adsorption-desorption measurements indicate the formation of a mesoporous structure with a BET

surface area of about 107 m²/g, Fourier-transformed infrared elucidates the presence of O-H, amino groups, triazine, Ti-O vibrations modes. At the same time, X-ray photoelectron spectroscopy analysis manifests the presence of Mg, C C elements. For aqueous Cd (II) ions, the MgO⊕TiO₂⊕g-C₂N₄ nanostructure displays a superior adsorption efficien 99.94% Cd (II) elimination with an optimum adsorption capacity of 515.86 mg/g in a short duration of 16 min demonstrates the capability of using the MgO⊕TiO₂⊕g-C₃N₄ nanostructure as an efficient and reusable adsorbent fo of Cd (II) ions in wastewater treatment and potentially for the removal of other beavy metal ions.



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<sup>&</sup>lt;sup>2</sup>Physics Department, College of Science, Imam Mohammad Ibn Saud Islamic University (IMSIU), Riyadh 11623, Saudi Arabia

<sup>&</sup>lt;sup>3</sup>Chemistry Department, College of Science, Imam Mohammad Ibn Saud Islamic University (IMSIU), Riyadh 11623, Saudi Arabia

Department of Mathematics and Science, Faculty of Humanities and Sciences, Prince Sultan University, Riyadh, Saudi Arabia





Sustainable Development Report 2021-2022

Life On Land





# Supporting land ecosystems through education

Events about sustainable use of land

Support or organise events aimed to promote conservation and sustainable utilisation of the land, including forests and wild land

# THE 2ND YOUNG REPORTERS COMPETITION

We are pleased to invite your students to participate by submitting an original written report under one of the following topics:

- 1-Green Initiative in Saudi Arabia
- 2-Tourism in Saudi Arabia

Criteria of selection:

- Motivation







# Supporting land ecosystems through action

### Local biodiversity included in planning and development

Include local biodiversity into any planning and development process (e.g. construction of new buildings)



# Architecture Club

# Towards Healing Environment for Hospital Buildings

Presenter: Dr. Eman Sabry

Coordinator: Dr. Salma Dwidar

Date: Thursday 11 th of November 2021

Time: 12:00 to 1:00pm

Location: Online

Link: https://meet.google.com/npx-ndzk-rzq?authuser=0

Workshop Registration Link::

Use link or Scan barcode for registration



https://docs.google.com/document/d/1Ro5JyP\_8pwOqSTfMoeOPgJ03Mhkyk3OF/edit?usp=sharing&ould=108789647480683238642&rtpof=true&sd=true

# Discerption

The internal environment of the hospitals design is considered one of the most complex types of design processes. Recently the interest in improving hospital environments has increased and has become a major focus of the architectural design in order to convert the Hospital building from buildings that provide treatment only to an environment that supports and promotes healing for patients. This lecture aims to highlight the modern trends in designing the inpatient unit in the hospital to achieve the healing environment







### Land sensitive waste disposal

### Policy on plastic waste reduction

Prince Sultan University
PSU Policy Management Systems
Sustainable Waste Management, Prevention and Disposal Policy

Policy Code: GV0016

Policy Name: Sustainable Waste Management, Prevention and Disposal Policies

Handling Unit: PSU Maintenance Department Date of Current Revision: August 2020 Approved by: University Council Date of Approval: 02/09/2020

### Purpose and Aims:

Prince Sultan University is a sustainable green university that preaches and applies sustainable development approaches and practices at all levels. As part of its endeavors to build a safe, green campus, PSU adopts sustainable waste management and disposal practices that are implemented in coordination with municipal and government agencies.

### Aims:

PSU waste management and disposal policy aims to:

- · Build and maintain a safe, healthy green campus
- Apply the appropriate approach and use the proper channels for disposing waste based on its category
- · Minimize the use of plastics and reduce plastic waste
- Minimize the use of disposable items
- · Adopt energy efficiency standards
- Avoid carbon-intensive industries and similar chemical processes that cause the emission of unhealthy gases
- Measure and monitor the amount of landfill and recycled waste

### Categories of waste:

- 1- Landfill solid waste
- 2- Electronic waste
- 3- Paper waste
- 4- Hazardous materials
- 5- Reusable old furniture and equipment
- 6- Plastic waste
- 7- Carbon and unhealthy gas emissions

### **Policy**



PSU maintenance unit is the entity responsible for waste management, prevention and disposing



The maintenance unit establishes the appropriate infrastructure, instructions and quidance for waste management, prevention and disposing.



The maintenance unit applies the appropriate approach and channel for waste disposal based on the waste handling table below



Landfill waste is disposed using services provided by the Municipality waste disposal network



A prevention approach is used to reduce carbon and gas emissions



Other types of waste are disposed in coordination with specialized agencies and charity organizations



The unit regularly measures the amounts of landfill and recycled waste respectively and raises regular reports on these to upper admin departments



The department raises regular reports to the higher administration and the quality assurance office



The quality assurance office is responsible for monitoring performance and KPI's





Sustainable
Development
Report 2021-2022
Peace, Justice
& Strong
Institutions





# **Peace, Justice and Strong Institutions**

### University governance measures

Elected representation on the university's highest governing body from: students (both undergraduate and graduate), faculty, and staff (non-faculty employees)

### Students (both undergraduate and graduate)



# Student Council Advisory Board Members

Members	Title
Dr. Yazeed Alfakhri, Dean of Student Affairs,	Chair
Dr. Maha al-maiman, Vice Dean of Student Affairs	Co-Chair
Mr. Yazeed AbuShaea, Student Council Advisor (Male Campus)	Member
Ms. Lama Al-Luhaidan, Student Council Advisor (Female Campus)	Member
Mr. Mohammad AlSultan, Student Council President (Male Campus)	Member
Ms. Raghad Alrakaf, Student Council President (Female Campus)	Member

### **Digital Media**

UX Design Workshop, club Fair, workshop – Basics of Editing in Premiere Pro, Digital Media & HCI Showcase

### **EdTech Club:**

Orientation session, OpenMic session, Emerging Technologies session, KACST internship experience

### **PSU Toastmasters Club:**

Communication and Leadership Skills





### Students' union

Union provides support for students











# **Identify and engage with local stakeholders**

PSU has written policies and procedures to identify local stakeholders external to the university and engage with them.

Prince Sultan University PSU	
Policy Management System	
Stakeholders involvement polic	y

Policy Code:	GV0012
Policy Name:	Stakeholders involvement policy
Handler:	Academic Affairs
Date Created:	15 July 2020
Date of Current Review:	15 August 2020
Approved by:	University Council
Date of Approval:	02/09/2020











# Participatory bodies for stakeholder engagement

An offshoot of Prince Sultan University's Industry 4.0 Center, the Prosthetics and Orthotics Center, run in collaboration with Nia Technologies, aims to use the latest technology to serve people with disabilities, says Abdulhakim Almajid, dean of the College of Engineering at PSU.





Prince Sultan University (PSU) in Riyadh, Saudi Arabia, and Trimble Inc. (NASDAQ: TRMB) have recently signed a memorandum of understanding (MOU). The purpose of this MOU is to set forth increased collaboration and cooperation between the College of Engineering at PSU and Trimble to educate the students with advanced 3D BIM Tekla Solutions used in the construction world.





# University principles on corruption and bribery

Publish the university's principles and commitments on organized crime, corruption & bribery

	Prince Sultan Universit	
	Policy Management System	
	Principles on Organized Crime, Corrupt	ion, and Bribery Policy
Policy Code:	GV0013	
Policy Name:	Principles on Organized Crime, Corruption, and	Bribery Policy
Handler:	Academic Affairs	
Date Created:	15 July 2020	
Date of Current Review:	15 August 2020	
Approved by:	University Council	
Date of Approval:	02/09/2020	03452233

PSU Compliance Office ensures the institution functions in a legal and ethical manner while meeting its institutional goals. The office is also responsible for developing compliance programs, reviewing the institutional policies, and advising the management on the possible risks.

Our commitment to acting with integrity in all situations is crucial for us as PSU Compliance Officer and PSU Compliance office to guarantee the trust of the PSU community, the stakeholders, and the society in general.

### **Academic freedom policy**

Have a policy on supporting academic freedom (freedom to choose areas of research and to speak and teach publicly about the area of their research)

Prince Sultan University PSU

Policy Management System		
	Academic Freedom	Policy
Policy Code:	GV0014	
Policy Name:	Academic Freedom Policy	
Handler:	Academic Affairs	
Date Created:	15 July 2020	(m) <b>42</b> (32)
Date of Current Review:	15 August 2020	
Approved by:	University Council	<u> </u>
Date of Approval:	02/09/2020	

The academic freedom is the central right of any academician and an academic institution. Academic freedom is a termed as an open and multi-dimensional deliberation on a topic in an academic context. Prince Sultan University has ethical and legal duty to the develop student's understanding and learning through academic freedom.





### Research freedom for senior academics



# Prince Sultan University's research excellence strategy pays off



More funding and reduced teaching loads have helped researchers increase their output by 500 per cent





# **Research freedom for junior academics**

### **Welcoming Ceremony of GPDRL New Members**



Number of Organized Events by PSU Labs Per College in 2020, 2021, 2022 Last updated: 10/25/2022 5:35:02 AM

CL Grand Total Lab CCIS CE ■ AIDA Lab ALLAB Lab ASSCL ■ GPDRL Lab 250 ■ LDSHRG REL Lab RIOTU Lab ant/Activity Type 120 120 S&M Lab SA Lab ■ SEL Lab SSE Lab ■ TAS Lab ■ Total RIOTU Lab SEL Lab REL Lab S&M Lab SSE Lab ALLAB Lab LDSHRG







### **Teaching freedom for senior academics**









# **Teaching freedom for junior academics**

A workshop on "Cisco Packet Tracer and Wireshark" for PSU students by CME & Smart Systems Engineering Lab - March 30th and 31st, 2022



### **AI&GameDev Showcase**







# Working with government

Provide expert advice to local, regional or national government through policy guidance, participation in committees, provision of evidence.

The President of Prince Sultan University participates in a session in The International Conference & Exhibition for Education 2022

DAY THREE: Tuesday, 10 May 2022 14:45 - 16:15 **SESSION THREE: Financing and Investment in Education** 





H.E. Dr. Ahmed S. Al-Yamani President, Prince Sultan University, Kingdom of Saudi Arabia

Presentation Title: Privatization and its Role in Raising the Quality of Higher Education

International Conference and Exhibition for Education 2022

DAY THREE:

Tuesday, 10 May 2022

14:45 - 16:15

SESSION THREE: Financing and Investment in Education



Moderator Mr. Mohammed Ali Al-Bishi

Editor of economy and business news in "Economy of the East with Bloomberg" in KSA Kingdom of Saudi Arabia



H.E. Dr. Hindi Abdullah Al-Suhaimi

Assistant Minister of Finance Kingdom of Saudi Arabia

### Presentation Title:

The role of Ministry of Finance in supporting Education Sectors



### H.E. Dr. Khalid Abdulrahman Alhamoudi

President - Dar AlUloom Kingdom of Saudi Arabia

### Presentation Title:

Methods for Sustaining Non-profit Education



H.E. Dr. Ahmed S. Al-Yamani

President, Prince Sultan Dean University, Kingdom of Saudi Arabia

### Presentation Title:

Privatization and its Role in Raising the Quality of Higher Education



Prof. Dr. Zeger Degraeve

MBS College Belgium

### Presentation Title:

World-class Business Schools: Sources and Uses of Financing



Prof. Nora Ann Colton

Director, UCL Global Business School for Health, UCL, United Kingdom

### Presentation Title:

Revenue Diversification in Higher Education Institutions: Challenges and Opportunities





Professor Mohammad Nurunnabi participated as a speaker in United Nations Environment Programme - UNEP YEA! Global Summit 2022.



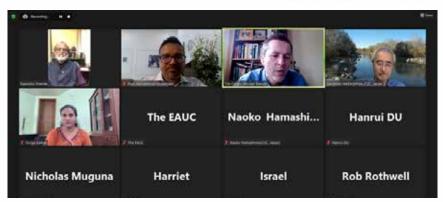
















### **Neutral platform to discuss issues**

Provide a neutral platform and 'safe' space for different political stakeholders to come together to frankly discuss challenges



A delegation from the Ministry of Human Resources and Social Development visits the university to discuss means of cooperation between the two parties. His Excellency Dr. Ahmed Al Yamani, University President, received a delegation from the Ministry of Human Resources and Social Development headed by Undersecretary for Labor Affairs and Chairman of the Employment Working Group, Dr. Ahmed Al-Zahrani, to discuss means of cooperation between the two parties.

# Prince Sultan University held the International Conference on Sustainability: Developments and Innovations













Sustainable
Development
Report 2020
Partnerships
for the Goals





# Relationships to support the goals

### Relationships with regional NGOs and government for SDG policy

PSU has direct involvement in, or input into, national government or regional non-government organisations, SDG policy development including identifying problems and challenges, developing policies and strategies, modelling likely futures with and without interventions, monitoring and reporting on interventions, and enabling adaptive management. Each year PSU submits relevant data to Ministry of Education and ETEC; Policy Papers and Cooperation with Emerald.

### Relationships with regional NGOs and government for SDG policy

















# **Cross sectoral dialogue about SDGs**

Initiate and participate in cross-sectoral dialogue about the SDGs, e.g. conferences involving government or NGOs

PSU organizes international conferences and include topical SDG issues. Policy forum and discussion involving government/NGOs/international stakeholders.

Net Zero Emission and Transition Towards Climate-Neutral Economies: The Role of Higher Education and Saudi Vision 2030







### International collaboration data gathering for SDG

Participate in international collaboration on gathering or measuring data for the SDGs. PSU has international collaboration with several universities to gather or measure the data related to the SDGs

### Global Index for Health and Well-being Survey 2021

We are proud to announce that we have joined the Global Education Policy Network (GEPN), a global think tank led by Prince Sultan University and The State University of New York at Buffalo.

With the aim of providing policy guidance for educational institutions, governments and international organizations. GEPN seeks to collect information on the health and well-being of students in higher education in light of the Covid19 pandemic and is connected to the UN Sustainable Development Goals (SDG 3 - Health).

In order to establish a precise picture as to how the COVID-19 pandemic affected university students in particular, it is important to better understand the health and wellbeing of students. The Global Index for Health and Well-being will help policymakers to create a national and global framework on students' health and well-being concerns.



### **Partners**

A consortium of partners is involved in this project, scan the **QR code** to learn more about our partners.







# **Collaboration for SDG best practice**

Through international collaboration and research, review comparative approaches and develop international best practice on tackling the SDGs. PSU has international collaboration and research. In research, we focus on review comparative approaches and develop international best practice on tackling the SDGs

### Impact of COVID-19: How CEOs Respond to SMEs Recovery Planning in Saudi Arabia



Businesses have been forced to find creative and innovative ways of addressing some of the great challenges facing our world resulting from COVID-19 pandemic. This report presents an analysis of the findings from the interviews of chief executive officers (CEOs) of 111 small and medium enterprises (SMEs) in Saudi Arabia. Three key areas are highlighted: a) challenges that SMFs in Saudi Arabian businesses are facing due to the COVID-19 pandem-

ic; b) the impact of the COVID-19 health crisis on their businesses; and c) their recovery plans to sustain in their business. The outcome of the findings offers a broader understanding of how a wide-ranging of innovative ideas associated with an organisation's desire for improving its efficiency, effectiveness and value creation for customers and other stakeholders such as government and the community.







### Collaboration with NGOs for SDGs

Collaborate with NGOs to tackle the SDGs through: student volunteering programmes, research programmes, or development of educational resources.

PSU has collaboration with NGOs to tackle the SDGs through: student volunteering programmes, research programmes, or development of educational resources. Students participate in local and international forums. Our researchers also collaborate with international researchers focusing on SDGs.



Student volunteering programmes

Research programmes

**Development of educational** resources



### **PSU SDG Club**

### Who we are

Prince Sultan University SDG Club as part of the Center for Sustainability and Climate (CSC) aims to engage students in higher education to achieve Saudi Arabia's Vision 2030 and in the global effort to contribute to the UN Sustainable Development Goals 2030 (SDG) agenda towards sustainability and climate justice, as well as empower them with the knowledge, skills, and pathways to action to be effective agents of change today.





The PSU SDG Club coordinates educational events, social events, spread awareness, and advocate for sustainable initiatives at the university and among the student population in Saudi Arabia and the region.

We, the member, educate ourselves and others about important environmental and sustainability issues as well as develop a collective language and vision among the students' community.

The PSU SDG Club also facilitates collaboration and helps get project ideas off the ground.

Our Sustainability Initiatives and Campaigns

- GO GREEN Initiative
- Zero Waste Campaign
- Earth Day
- **UN SDG and Climate Week**
- Youth Sustainability Leaderships Certification
- Volunteering at Center for Sustainability and Climate (CSC)

**Vision** 

To Act, Build and Collaborate work towards the global Sustainable Development Goals and impact the community

Mission

To educate students about environmental and climate issues, and bring students together to discuss pressing Sustainable Development Goals (SDG) issues and host events, volunteer and assist in SDG initiatives, and connect with the local and global community. The individual work will make a collective impact on the challenges posed by integral sustainability.





### **Our SDG Club Governance**



Yumna Alnadeem President



Meshari Samir Alalkami President



Abdullah Dabaan Vice President



Aljoaharah Dhafir Saad Alshahrani Vice President



Reema Saleh I Alhudhaif Student Advisor Lead



Renad Mohammed Algarni Vice President



**Laith Alamro** Marketing Director



**Dimah Waleed Alharkan** Marketing Director



**Rahf Aloubal** Event & Community Impact Director



**Shahah Alnafia Event & Community Impact** Director







Rawan Alnafeesah **Event & Community Impact** Director



**Amal AlSaud Event & Community Impact** Director



Mashael Almualam **Event & Community Impact** Director



Abdullah Al Shawaf **Event & Community Impact** Director



**Danah Dkiel Event & Community Impact** Director



Saud Abdulrahman **Almogbel Event & Community** Impact Director



Aljwhrah Albegami Event & Community Impact Director



AlDanah Alhokair **Event & Community** Impact Director



Muzen Al-Assaf **Event & Community** Impact Director



Amena Abdul Naseer **Event & Community** Impact Director



Norah Alqusayer **Event & Community** Impact Director





# **Our SDG Club Members and Our SDG Club Faculty Advisors**



Prof. Mohammad Nurunnabi Director



Dr. Sanjida Haque **Associate Director** 



**Dr. Enis Omerovic** Faculty Advisor



Dr. Zainab Rawshdeh **Faculty Advisor** 



**Prof. Francisco Bastida Faculty Advisor** 



Ms. Fawzia Gonie Faculty Advisor





### **Education for the SDGs**

### Education for SDGs commitment to meaningful education

All programs of PSU have a meaningful commitment to meaningful education around the SDGs. Have a commitment to meaningful education around the SDGs across the university, relevant and applicable to all students















### **Course Specifications**

Course Title:	Legal Environment of Business	
Course Code:	BUS 231	
Program:	Bachelor of Science (Finance) Bachelor of Science (Accounting) Bachelor of Science (Marketing)	
Department:	Aviation and Management	
College:	College of Business Administration	
Institution:	Prince Sultan University	







### **Education for SDGs specific courses on sustainability**

Have dedicated courses (full degrees, or electives) that address sustainability and the SDGs.

### Education for SDGs in the wider community

Have dedicated outreach educational activities for the wider community, which could include alumni, local residents, displaced people



Alumni



Local community

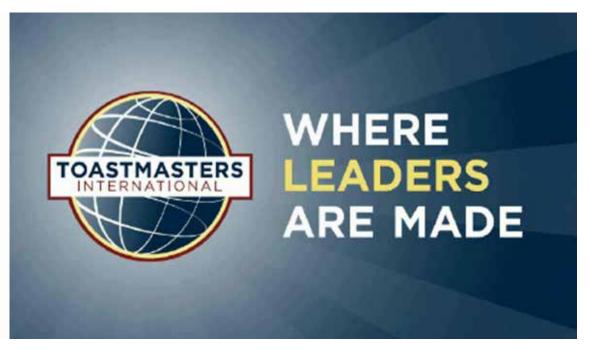


Displaced people and refugees



### Alumni

Prince Sultan University Toastmasters Reflect and Speak about the Sustainable Development Goals 2030







# **Local community**

### Professor Mohammad Nurunnabi participated as a speaker in Saudi Youth for Sustainability Conference 2022



Professor Mohammad Nurunnabi PhD (Edinburgh), FAIA(Acad), SFHEA, FRSA, CMBE, CMA, FFA, FIPA, CPA from Prince Sultan University was a distinguished speaker at the Inaugural Conference of Saudi Youth for Sustainability themed Thriving Together - King Abdullah University of Science and Technology (KAUST), Saudi Arabia.

Professor Mohammad Nurunnabi discussed "Re-imagining the Role of Education on Sustainability" and highlighted that collective efforts from all Saudi Universities will accomplish Vision 2030 and Saudi Green Initiative towards a sustainable future of Saudi Arabia.







# Mark Displaced people and refugees

Professor Mohammad Nurunnabi participated as a speaker in United Nations Environment Programme - UNEP YEA! Global Summit 2022

Professor Mohammad Nurunnabi PhD (Edinburgh), FAIA(Acad), SFHEA, FRSA, CMBE, CMA, FFA, FIPA, CPA from Prince Sultan University was a distinguished speaker in the session titled – "Continue the conversation with critical questions and ambition for Race to Zero Universities and Colleges".





Professor Mohammad Nurunnabi discussed "Re-imagining the Role of Education on Sustainability" and highlighted that Prince Sultan University in Saudi Arabia has been taking impactful steps towards achieving the UN's SDGs, and has the kingdom's own Vision 2030 in its sights. Universities' ability to demonstrate their social and environmental impact is more important than ever and, consequently, an increasing number of institutions now benchmark their impact against the United Nations Sustainable Development Goals (SDGs). Prince Sultan University (PSU) in Saudi Arabia is no exception and places Sustainable Development Goals at the heart of its mission. It has singled out a number of SDGs it feels to be most important to its student body, community and the future of the kingdom. Prince Sultan University is the First Saudi University to Pledge Net Zero Carbon University by 2060. Race to Zero for Universities and Colleges campaign is run in partnership with EAUC, Second Nature and UN Environment. EAUC are the secretariat. Being part to this campaign Prince Sultan University has been added to the UNFCCC Race to Zero campaign.













