

## Courses on Environmental Sustainability

#### Overview

Air University Islamabad offers a range of undergraduate and postgraduate courses that specifically address climate science and environmental sustainability. These courses are embedded within various academic programs offered by the faculties of Engineering, Computing & AI, and Social Sciences, as well as through interdisciplinary electives. Topics covered include environmental management systems, renewable energy technologies, sustainable development, green computing, and the societal impacts of climate change.

Air University demonstrates an enduring commitment to environmental sustainability, guided by the United Nations Sustainable Development Goals (SDGs). Through a comprehensive integration of sustainability in education, research, and community outreach, the university seeks to play an active role in addressing today's global challenges. In line with SDG 13 (Climate Action) and SDG 4 (Quality Education), the institution encourages research and learning that equip students with the knowledge and skills needed to become sustainability-minded leaders.

Moreover, sustainability themes are incorporated into thesis projects, capstone research, and co-curricular activities to ensure practical understanding and engagement. This approach reflects the university's holistic vision under the **Environmental Impact** category of the QS Sustainability Rankings, aiming to contribute meaningfully to global climate resilience and environmental stewardship.

## EE1 – Academic Reputation in Earth & Environment

**Status & Progress:** Air University maintains an interdisciplinary approach to environmental education by embedding sustainability-related content across a range of programs. While Earth and Environmental Sciences are not offered as standalone degree programs, key sustainability themes are reflected in academic, research, and institutional activities.

Highlights:

- Introduction of environmental sustainability concepts in various academic disciplines.
- Establishment of the Research Centre for Environmental Sustainability within the Business Incubation Centre, facilitating innovation in climate science, sustainable technologies, and applied research.

**Strategic Focus:** The university is exploring further opportunities to enhance academic contributions in the environmental domain through new initiatives and potential program offerings. Strengthening its academic footprint in environmental research remains a strategic area for development.



## EE2 – Alumni Impact for Environmental Sustainability

**Status & Progress:** Air University graduates are contributing to sustainability goals across diverse sectors, including public service, innovation, and private enterprise. Many of these impacts are the result of academic grounding in sustainability principles delivered through interdisciplinary courses.

Highlights:

- Alumni-led startups incubated through the university's Business Incubation Centre, contributing to sustainable solutions and technological innovation.
- Alumni engagement in community-based and policy-level sustainability efforts.

**Strategic Focus:** The university continues to enhance mechanisms for capturing alumni contributions through structured engagement platforms and stakeholder feedback. Dedicated efforts are underway to showcase and scale alumni impact in the sustainability domain.

#### EE3 – Climate Science and/or Sustainability Courses

**Status & Progress:** Air University offers a robust portfolio of over 170 undergraduate and postgraduate courses that incorporate themes of sustainability, climate science, and environmental responsibility.

Highlights:

- Courses span disciplines such as computer science, engineering, psychology, management, and international relations.
- Consistent inclusion of sustainability across campuses in Islamabad, Kamra, and Multan.
- Emphasis on responsible use of resources, ecosystem preservation, and climate resilience.

**Strategic Focus:** The university aims to further expand the integration of sustainability into curricula, alongside the potential introduction of certificates and micro-credentials focused on environmental literacy.

#### Evidence:

- **Annex A:** Photographs from courses, labs, or events showcasing environmental themes.
- Annex B: List of sustainability-focused courses with descriptions.
- Annex C: Case studies or summaries of alumni/startups with environmental impact.



• Annex D: Details of the Research Centre and incubation initiatives.

## **Prepared by:** Quality Enhancement Cell (QEC) **Air University Islamabad For submission to:** QS Rankings - Environmental Impact Category

**Annex A:** Photographs from courses, labs, or events showcasing environmental themes

Semester VI			
TH 334	Marketing Management in Tourism & Hospitality	3-0-3	MK 101
TH 363	Destination Management	3-0-3	-
TH 364	Event Management	3-0-3	-
TH 363	Sustainability in Tourism & Hospitality	3-0-3	-
BA 363	Business Research Methods	3-0-3	-

Marketing	Finance
Marketing Strategy and Management	Money and Capital Markets
Strategic Services Marketing	Basil I & II
2	Corporate Securities and Regulatory Framework
	Global Asset and Wealth Management
Topics in Advertising and Integrated Marketing Communications (IMC)	Financial Theory
Sales Management	Corporate Valuation
Business to Business Marketing	Corporate Valuation Investment Analysis and Corporate Portfolio Management
Strategic Brand Management	Dynamic Asset Pricing Theory
Integrated Marketing Communications	Financial Risk Management
Marketing in Hospitality and Tourism Industry	Financial Derivatives
Agriculture Marketing	International Finance
-	Capital Risk Management
	Financial Econometrics
The Psychology of Judgment and Decision Theory	Empirical Finance Financial Modeling
Topics in Consumer Behavior	SME and Rural Finance
Consumer Behavior Models	Islamic Banking and Finance
Culture and Persuasion	Venture Capital and Private Equity
Markeling Models	
-	
	Marketing Strategy and Management Strategic Services Marketing International Marketing Strategies for Emerging Markets Topics in Advertising and Integrated Marketing Communications (IMC) Sales Management Business to Business Marketing Strategic Brand Management Integrated Marketing Communications Marketing in Hospitality and Tourism Industry Agriculture Marketing Social Media Advertising Digital Marketing The Psychology of Judgment and Decision Theory Topics in Consumer Behavior Consumer Behavior Models Cutture and Persuasion



Annex B: List of sustainability-focused courses with descriptions.

### **Course Descriptions**

# Course Title: Introduction to Information and Communication Technologies (CS 180)

**Sustainability Alignment:** This course develops digital literacy while promoting inclusive access to technology and teamwork, contributing to social sustainability by equipping students with collaboration and problem-solving skills essential for sustainable innovation.

#### Course Title: Programming Fundamentals (CS 111)

**Sustainability Alignment:** By embedding analytical thinking and problem-solving frameworks, this course supports quality education and social equity, both central themes of SDG 4 and SDG 10.

#### **Course Title: Professional Practices (CS 270)**

**Sustainability Alignment:** Focuses on ethics, social responsibility, and professional conduct in the digital age—enabling future professionals to consider the societal impact of technological solutions.

#### Course Title: Data Structures and Algorithm (CS 214)

**Sustainability Alignment:** Introduces efficiency and optimization—principles essential for the development of sustainable and scalable software systems.

## Course Title: Mobile Computing (CS 281)

**Sustainability Alignment:** Encourages the design of energy-efficient and inclusive mobile applications, contributing to sustainable technology practices in underserved areas.

## Course Title: Artificial Intelligence (CS 340)

**Sustainability Alignment:** Encourages development of Al-driven solutions to global challenges such as resource optimization, smart cities, and environmental monitoring.

#### Course Title: Environmental Psychology (PY380)

**Sustainability Alignment:** Directly addresses human-environment interactions and psychological responses to climate change, fostering environmentally responsible behavior.

#### **Course Title: Introduction to Environmental Studies (HU126)**

**Sustainability Alignment:** Provides foundational knowledge of global environmental issues, sustainable development goals, and climate literacy across disciplines.

## Course Title: Principles of Health Care (HC241)

**Sustainability Alignment:** Emphasizes public health, equitable access, and sustainable healthcare delivery systems aligned with SDG 3.



## **Course Title: Software Construction and Development (SE313)**

**Sustainability Alignment:** Integrates environmentally sustainable software design principles and encourages development of green technology applications.

### Course Title: Cultural Heritage of Pakistan (TH241)

**Sustainability Alignment:** Promotes cultural preservation and awareness, aligning with environmental stewardship and sustainable tourism.

## Course Title: Ethical Hacking & Defense I (CY244)

**Sustainability Alignment:** Highlights ethical responsibility and the protection of critical digital infrastructure as part of secure, sustainable digital ecosystems.

#### Course Title: Full Stack Web Development (CS 300)

**Sustainability Alignment:** Advocates for sustainable UI/UX practices and efficient backend systems to reduce digital carbon footprints.

#### Course Title: Tourism & Hospitality Laws (TH212)

**Sustainability Alignment:** Reinforces regulatory frameworks for eco-tourism and sustainable hospitality management.

#### Course Title: Pakistan Studies (HU110)

**Sustainability Alignment:** Encourages civic responsibility and understanding of national environmental and development policies.

#### Course Title: Entrepreneurship (CE491)

**Sustainability Alignment:** Encourages innovation in green businesses, social entrepreneurship, and environmentally responsible startups.

## Introduction to Psychology (HU213)

Promotes understanding of individual and group behavior in the context of social wellbeing, contributing to SDG 3 and social sustainability through mental health awareness and social cohesion.

#### Introduction to Sociology (HU214)

Explores social systems, equity, and institutions, helping students understand the societal impacts of sustainable development and justice, aligned with SDG 10 and 16.

#### Ethics (HU215 / HU315)

Builds ethical decision-making frameworks essential to social responsibility and sustainability in various professional contexts.

## Foreign Languages: Arabic, French, Chinese (HU217, HU218, HU219)

Foster cross-cultural understanding and global citizenship, supporting inclusive and sustainable societies as envisioned in SDG 4 and 17.

#### Introduction to Environmental Studies (HU221)

Introduces core principles of environmental science, sustainable ecosystems, and climate literacy aligned with SDGs 13 and 15.



## Human Rights and Citizenship (HU223)

Develops understanding of civil rights, civic responsibility, and social justice, reinforcing goals related to peace, justice, and strong institutions (SDG 16).

## Technical Report Writing / Business & Academic Writing (HU304, HU305, HU307, HU401, HU501)

Develops communication skills vital for disseminating sustainability research, writing proposals, and participating in civic dialogue.

## Contemporary International Relations / International Law / Security & Conflict Analysis (HU314, HU316, SS627, SS611)

Examines the role of diplomacy, governance, and institutional collaboration in achieving sustainable peace and development.

#### **Community Service Learning (HU406)**

Promotes experiential learning and social engagement with local communities to address sustainability challenges.

#### Peace Psychology / Gender Issues in Psychology (PY462, PY415)

Addresses peacebuilding and equity, aligned with SDGs 5 and 16, by promoting inclusive, peaceful societies.

#### Tourism & Hospitality (TH313, TH414, TH212, TH242)

Encourages sustainable tourism practices and strategic management for cultural preservation, local development, and environmental sustainability.

## Health Care Planning and Management (HC221, HC241, HC352, HC333, HC336)

Focuses on sustainable and equitable healthcare systems that improve public health outcomes and promote responsible resource use (SDG 3).

## Finance and Economics (AF102, AF772, BA111, BA112, BA484)

Introduces financial and economic principles that support sustainable business decision-making, including ESG (Environmental, Social, and Governance) awareness.

## Entrepreneurship, MIS, and Project Management (CE491, BA157, BA475)

Prepares students to build innovation-driven ventures and manage systems efficiently in alignment with sustainable business practices.

#### International Relations & Political Science (IR100, IR101, IR131, IR425)

Provides insight into global challenges and the interdependence of environmental, political, and economic systems.

#### Capstone and Final Year Projects (XX XXX)

Enable students to engage in interdisciplinary problem-solving related to real-world sustainability challenges across fields.

#### Other Notable Courses



- **Self-Development (BA106)**: Focuses on personal responsibility, ethics, and leadership for sustainability.
- Introduction to Artificial Intelligence (CS438): Encourages development of intelligent systems for smart cities and environmental monitoring.
- **Information Security (CY406)**: Supports the protection of digital systems vital to modern sustainable infrastructure.
- Global Sourcing & Logistics / Supply Chain Management (SC703, SC711): Encourages responsible production and supply chain practices.

Program	Courses related to sustainability
Department of Business Administration	Department of Education
<ul> <li>Administration</li> <li>Business Analytics</li> <li>E-commerce &amp; Digital Marketing</li> <li>Entrepreneurship</li> <li>International Business Management</li> <li>Logic and Critical Thinking</li> <li>Project Management</li> <li>Supply Chain Management</li> <li>Microeconomics</li> <li>Macroeconomics</li> <li>Organizational Behavior</li> <li>Business Ethics</li> <li>Self-Development</li> <li>Pakistan Economy</li> </ul>	<ul> <li>Civics and Community Engagement</li> <li>Introduction to Environmental Science</li> <li>Introduction to Environmental Studies</li> <li>Introduction to Geography</li> <li>Introduction to Human Rights &amp; Citizenship</li> <li>Introductory Biology</li> <li>Pedagogy</li> <li>School, Community and Teacher(Foundation)</li> </ul>
Department of Computer Science	Department of Mathematics
Artificial Intelligence	Cryptography
HCI and Computer Graphics	Theory of Viscous Fluids
Professional Practices	
Public Relations	



Department of Psychology	Department of Electrical & Computer Engg
Biological Basis of Behavior	
Environmental Psychology	• Ethics
Community Service	<ul> <li>International Relations</li> </ul>
Peace Psychology	
Community Psychology	
Gender Issues in Psychology	
Health Psychology	
Mental health and Psychopathology	

Specialised Courses on Sustainability:-



Co	urse list related to sustainabilty (Up To 5th Sem	ester)	
Course Title	PLO 06: Ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.	PLO 7: Ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.	PLO 8: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
Applied Chemistry		×	
Workshop Practice - I			~
Communication Skills			~
Workshop Practice - II			~
Islamic Studies/Ethics	×		~
Thermodynamics - II		4	
Health, Safety and Environment	✓		
Manufacturing Process - I Lab			V
Manufacturing Processes - II Lab			V

## Number of Courses/Subjects Related to Sustainability Offered

This annex outlines select courses offered by Air University that incorporate sustainabilityrelated content in line with QS Sustainability Indicator EE3 (Climate Science and/or Sustainability Courses). These courses promote interdisciplinary learning and are strategically aligned with the United Nations Sustainable Development Goals (SDGs). Descriptions have been refined to highlight their contribution to social, environmental, or economic sustainability.



List of Courses currently offered at Air University

Course Code	Course Name
CS 180	Introduction to Information and Communication Technologies
CS 111	Programing Fundamentals
CS 270	Professional Practices
CS 214	Data Structures and Algorithm
CS 223	Computer Organization and Assembly Language
CS 225	Operating System
CS 281	Mobile Computing
CS 230	Database Systems
CS 360	Computer Networks
CS 332	Design and Analysis of Algorithm
CS 382	Visual Programming
CS 333	Theory of Automata
CS 340	Artificial Intelligence
CS 371	Software Engineering
CS 426	Parallel and Distributed Computing
CS 415	Information Security
CS 406	Data Science
CS 402	Data warehousing and Data Mining
CS 300	Full Stack Web Development
CS 484	Cloud Computing
CS 383	Multimedia Technologies
CS 290	Internship-I
ME 100	Introduction to Mechanical Engineering
ME 140	Workshop Practice-I
ME 139	Engineering Drawing and Graphics
ME 222	Engineering Dynamics
ME 233	Fluid Mechanics-II
ME 248	Manufacturing Process-I
ME 327	Machine Design-I
ME 312	Instrumentation and measurement
ME 349	Computer Aided Engineering
EE405	VLSIDesign
EE462	Computer Networks
EE500	Final Year Project III
EE402	Power Electronics II
EE354	Control Systems
EE498	Final Year Project I
EE341	Electrical Machines
EE201	Network Analysis
EE102	Electric Circuit Analysis
CE101	Computer Organization Fundamentals
CE202	Computer Architecture



CE311	Software Engineering
CE498	Final Year Project II
CE491	Entrepreneurship
CE499	Final Year Project III
CE402	Introduction to Robotics
MT102	Workshop Practice
MT396	Final Year Project I
MT142	Electric Circuits Analysis
MT252	Signals and System
MT396	Final Year Project I
MT373	Modeling and Simulation in Mechatronics
BM121	Circuit Analysis
BM113	Human Anatomy
BM131L	Computer Aided Engineering Drawing
IT495	Final Project II
IT494	Final Year Project I
CY250	Secure Software Development
CY244	Ethical Hacking & Defense I
CY345	Ethical Hacking and Defense II
CY494	Final Project I
CY351	Web Application Security
CY495	Final Project-II
MA498	Final Year Project I
MA499	Final Year Project II
PH201	Heat and Thermodynamics
PH207	Physical Electronics
PH205	Electrodynamics
PH204	Optics
AM201	Introduction to Aviation
AM203	Weather and Meteorology
AM330	Aviation Marketing
AM334	Aviation Economics
AM323	Aviation Security Management
AM445	Human Factors in Aviation
AM453	Airline Finance
BA111	Financial Accounting I
BA151	Principles of Management
BA112	Financial Accounting II
BA484	Financial Risk Management
BA475	Project Management Information Systems
AF141	Principles of Accounting
HC241	Principles of Health Care
HC221	Health Care Policy & Management
TH110	Public Relations
TH241	Cultural Heritage of Pakistan
TH212	Tourism & Hospitality Laws
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PY220	Ethical Issues in Psychology
PY360	Social Psychology
PY380	Environmental Psychology
SE313	Software Construction and Development
SE211	Human Computer Interaction
GM231	3D Design and Modelling
AI130	Programming for Artificial Intelligence
IR100	Introduction to International Relations
IR101	International Relations since 1945
HU110	Pakistan Studies
HU126	Introduction to Environmental Studies
HU205	Business Communication
HU213	Introduction to Psychology
HU214	Introduction to Sociology
HU215	Ethics
HU217	Foreign Language: Arabic
HU218	Foreign Language: French
HU219	Foreign Language : Chinese
HU221	Introduction to Environmental Studies
HU222	Introduction to International Relations
HU223	Human Rights and Citizenship
HU223	Introduction to Human Rights & Citizenship
HU304	Technical Report Writing
HU305	Technical Report Writing
HU307	Technical Report Writing
HU314	Contemporary International Relations
HU315	Ethics
HU316	International Relations
HU317	Interpersonal Skills/ Public Relations
HU318	Public Relations
HU319	Principles of Economics
HU324	Arabic
HU325	Islamic History and Culture
HU401	Technical & Business Writing
HU406	Community Service Learning
HU501	Academic Writing
HU607	Modern Literature
HU613	Language and Identity
HU614	Functional Linguistics
HU615	Pakistani English
PY220	Ethical Issues in Psychology
PY212	Theories of Personality
AF 102	Financial Accounting-I
IR 131	Introduction to Strategic Studies
IR 100	Introduction to International Relations
TU001	Advisory Class



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IR 425	Religion and world politics
EL 105	Functional English
EL 106	Communications Skills
EL 203	Technical Writing and Presentation Skills
BA 157	Management information systems
MA 301	Probability and statistics
CY406	Information Security
CG213	Game Quality Assurance
CS111	Programming Fundamentals
BA101	Introductory Biology
BA106	Self-Development
CS438	Introduction to Artificial Intelligence
SE 600	Advanced Software Engineering
	Research Methodology
PY 621	Psycho Diagnostics Assessment of Adults
PY 620	Psycho Diagnostics Assessment of Children
TH 242	Culture Tourism
TH 313	Tourisms Marketing
HC 352	Health Care Planning
HC 333	Health care Inventory management
SC703	Global Sourcing and Logistics
SC711	Supply Chain management Essentials
HC 336	Health care Economics
PY425	Case Report and Practicum
PY 462	Peace Psychology
PY 415	Gender Issues in Psychology
CY334	Digital Forensics
CY 335	Vulnerability assessment and reverse engineering
AF 772	Financial Econometrics
SS 611	Security and Conflict Analysis
SS 717	Civil-Military Relations: Theory and Practice
SS 627	International Law
HU 405	Ideology and Constitution of Pakistan
MA120	Mathematics and Logics I
MA 112	Mathematics and Logics II
XX XXX	Final year Project I
XX XXX	Final Year Project II
XX XXX	Final Year Project III
XX XXX	Capstone Project I
XX XXX	Capstone Project II
TH 414	Strategic Mgt, for Tourism & Hospitality



Open Access Article

## A Human-Centered Approach to Academic Performance Prediction Using Personality Factors in Educational Al

by Muhammad Adnan Aslam <sup>1,†</sup>  $\boxtimes$ , Fiza Murtaza <sup>1,†</sup>  $\boxtimes$ , Muhammad Ehatisham Ul Haq <sup>1,†</sup>  $\boxtimes$ , Amanullah Yasin <sup>1,†</sup>  $\boxtimes$  <sup>()</sup> and Muhammad Awais Azam <sup>2,\*,†</sup>  $\boxtimes$  <sup>()</sup>

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SDGs

#### AU DMTS FYP (Session\_ 2020-2024)

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ORIC		nt of Computer Games Development	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
Sr No.	Supervisor	Project Title	No Poverty	Zero Hunger	Good Heatih & Well- being	Quality Educatio n	Gender Educatio n	Clean Water and Sanitatio n	Affordabl e and Clean Energy	Decent work & Economi o Growth	Industry, Innovation & Infractruot ure	Reduced Inequaliti es	Sustaina bie office and communi fies	Responsi ble Consum ption & Produoti on	Climate Action	Life Below Water	Life on Land	Peace, Justice & Strong Institutio ns	Partners hips for the Goals
1	Mr. Usman Sarwar	VR Revolutionizing Restaurants								~									
2	Dr. Numan Alí	AR Development in Medical Field			~														
3	Dr. Hameed Urrahman	Al for Animation: Deep Learning for Character Control												1					
4	Dr. Numan Ali	Simulation-based Training for Armed Forces			~														
5	Dr. Hameedur Rahman	Animation based Guidance for Pilgrimager			1														
6	Mr. Usman Sarwar	Video Games for Ethical Built-up of Children				~													
7	Dr. Taiha	Bladestorm Al: Next-Gen NFT-based Game									*								
8	Dr. Hameed Urrahman	VR Golf									~								
9	Dr. Hameed Urrahman	Animation Series on the Affect of Smoking on Human Health			1														
10	Mr. Usman Sarwar	Journey for the Bliss Arcana									~								
11	Dr. Numan Alí	Story-based Open World Game									~								
12	Mr. Amir Ali	Game for Dyslexia Students					~												
13	Dr. Hameed Urrahn	Pakistan Racing Game				~													
14	Mr. Amir Ali	Web 3.0 based Mobile Game								~									
15	Mr. Amir Ali	Football Trainer				~													

Dr. Hameedur Rahman Professor & HoD Department of Computer Games Development Air University Islamabad







**Annex C:** Case studies or summaries of alumni/startups with environmental impact. (ORIC)



























• Annex D: Details of the Research Centre and incubation initiatives. (ORIC)

#### Vision:

AUBIC aspires to be among the leading Incubation centres by empowering start-ups to generate a positive, economic and social impact.

#### Mission:

Empowering start-ups through innovation, collaboration, and integrity to drive sustainable growth. Fostering a supportive ecosystem that promotes social responsibility and lifelong learning. Strengthen in Pakistan's entrepreneurial and landscape to create lasting economic and social impact.

#### Programme:

The incubation programs at AUBIC will be structured to cater for requirements of venous growth stages to propel ventures of students and young entrepreneurs to next stages. The details are as follows:.

#### a. Incubation:

Incubation stage mainly focuses on ideation stage, who has a potential innovative idea can be provided with a co-working space. During this period, the entrepreneur takes up the role of developing the idea into a proof of concept and prepares him for understanding the technical feasibility of the idea proposed AUBIC will be supporting the start-ups by mentoring or by creating right platform for networking. Once marketable technology/product ideas evolved, a company can be formed for induction to the Incubation Stage.

#### b. Acceleration:

This stage is where start-up companies draft/ handhold product development and prepare themselves for marketing. During this stage, the entrepreneur will put his efforts (such as technology team) to build a market viable prototype. AUBIC can also offer a wide array of value-added services like entrepreneur trainings and workshops, skill development programs, leadership programs and R&D facilities etc. to speed up the incubation cycle. The incubation stage enables the entrepreneur to be ready with an innovative technology in the form of marketable product that can primarily drive the market and helps to make pitch ready for investment.

#### Link:

https://www.au.edu.pk/Pages/AUBIC/AUBIC\_Intro.aspx https://www.au.edu.pk/Pages/AUBIC/AUBIC\_EVENTS.aspx https://www.au.edu.pk/Pages/AUBIC/AUBIC\_Success\_Story.aspx



## Evidence:

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am

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