Texas A&M University at Qatar is a leader for Qatar Foundation’s vision for multiversity to enrich learning and success of students across Qatar Foundation’s partner universities. The multiversity vision aligns with Texas A&M’s own purpose of developing leaders dedicated to serving the greater good, and we understand that graduates will be better equipped as engineering leaders through diverse experiences that cultivate holistic learning and multidimensional skills beyond the traditional classroom. To achieve this vision, Texas A&M University at Qatar is offering a multiversity course with Hamad Bin Khalifa University on smart grid.

Texas A&M University at Qatar
Electrical and Computer Engineering
Education City, Doha, Qatar
Phone: +974.4423.0201

Hamad Bin Khalifa University
College of Science & Engineering
Education City, Doha, Qatar
Phone: +974.4454.2577
Is an undergraduate course offered jointly by Texas A&M University at Qatar and Hamad Bin Khalifa University to enrich learning and success of students across Qatar Foundation's partner universities. Smart Grid is bound to give aspiring electrical engineering and computer science students the best academic path for building and developing the core areas of smart grid - microgrids, renewable energy, electric vehicle integration, and communication.

TEXTBOOK

PREREQUISITES
ECEN214 - Principles of Electrical Engineering or equivalent.

Instructors
Prof. Haitham Abu-Rub
haitham.abu-rub@qatar.tamu.edu

Assoc. Prof. Mohamed Abdallah
moabdallah@hbku.edu.qa

Assoc. Prof. Sertac Bayhan
sbayhan@hbku.edu.qa

Important Dates
Class Starts: July 31, 2022
Enrollment Deadline: August 4, 2022

COURSE OUTLINE
1. Smart grid architectural overview.
2. Renewable energy integration: opportunities and challenges.
3. Power electronics as enabling technology of the smart grid.
4. Microgrids: structure and control.
5. Energy storage for smart grid balancing.
6. Smart transportations
7. Demand response and demand side management.
8. Advanced metering infrastructure.
10. Simulation tools for the smart grid

The student is expected to attain basic knowledge of the following aspects:

1. Understand the smart grid concepts and terminology.
2. Know the renewable energy integration and microgrid technology.
3. Know about energy storage issues in smart grid.
4. Know the communication technologies, advanced metering infrastructure, and information security standards in smart grids.
5. Investigate the demand response, demand side management and economy of the smart grids.