

ELEC 4003 POWER QUALITY

Credit Points 10

Legacy Code 300995

Coordinator Ali Hellany ([https://directory.westernsydney.edu.au/search/name/Ali Hellany/](https://directory.westernsydney.edu.au/search/name/Ali%20Hellany/))

Description This unit is to introduce students to power quality phenomena such as voltage sag/swell, distortions, unbalance, and flicker that occur in power systems. The unit also introduces terms and definitions associated with power quality, following which each phenomenon, that is, voltage sag/swell, transient overvoltage, and harmonics. In addition, flicker is presented and discussed in detail for students to understand the sources and impact of these occurrences on power system as well as typical mitigation techniques. Finally, students are introduced to power quality benchmarking, monitoring and assessment.

School Eng, Design & Built Env

Discipline Electrical Engineering

Student Contribution Band HECS Band 2 10cp

Check your HECS Band contribution amount via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 4 subject

Restrictions Students must be enrolled in programs 3689 Bachelor of Engineering, 3740 Bachelor of Engineering (Honours) or 3690 Bachelor of Engineering Advanced (Honours) and must have successfully completed 150 credit points.

Assumed Knowledge

Students are expected to be familiar with basic power system calculations including balanced and unbalanced three-phase systems.

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Identify and classify power quality disturbances, their causes, and their impact on electrical equipment.
2. Apply Australian and international codes and standards to Power quality analysis as well as describe the terminology used in power quality engineering.
3. Identify the types of hardware and software tools available for use in power quality investigations.
4. Plan a power quality investigation, examine recorded data, and diagnose specific power quality problems.
5. Recommend appropriate mitigation techniques for power quality problems in proposed or existing designs.
6. Discuss power quality problems and present their written findings and recommendations to non-electrical audiences.

Subject Content

1. Power-Quality Standards
2. Voltage Distortion
3. Harmonics and Interharmonics
4. Harmonic Current Sources
5. Power Harmonic Filters
6. Methods for Correction of Power-Quality Problems
7. Power Quality Events

8. Power Quality Measurements

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Item	Length	Percent	Threshold	Individual/ Group Task
Presentation	Assignment should cover a sufficient literature-review study and should be no less than 2000 words	35	N	Individual
Report	A major assignment should normally be around 4000 words. Materials from progress report can be used in the final report.	65	N	Individual

Teaching Periods

Autumn Penrith (Kingswood)

Day

Subject Contact Ali Hellany ([https://directory.westernsydney.edu.au/search/name/Ali Hellany/](https://directory.westernsydney.edu.au/search/name/Ali%20Hellany/))

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC4003_22-AUT_KW_D#subjects)