

Course Title:	Power Systems in Quality Management
Course Code:	ENEL813
Descriptor Start Date:	01/01/2022
Descriptor End Date:	09/02/2023
POINTS:	15.00
LEVEL:	8
PREREQUISITE/S:	ENEL701
COREQUISITE/S:	None
RESTRICTION/S:	None

LEARNING HOURS

Hours may include lectures, tutorials, online forums, laboratories. Refer to your timetable and course information in Canvas for detailed information.

Total learning hours: 150

PRESCRIPTOR

Develops an understanding of how power quality is maintained in a power system and how the effects of local disturbances on a power system as a whole are analysed.

LEARNING OUTCOMES

1. Analyse different type of power quality problems and their impacts (a, b, c).
2. Explain how the voltage problem variations are developed due to different types of power system components (a, b, c).
3. Develop the equations describing the voltage sags and describe the voltage sags system performance indices (a, b, c, f, k).
4. Analyse and design mitigation schemes for voltage sags are measured using the standards (a,b, d, f, k)
5. Explain how harmonics problems occur and the sources of harmonics and calculate harmonic indices (a, b, c).
6. Design filters to mitigate harmonics problems (a, b, c, d).

Disclaimer: Course descriptors may be amended between teaching periods/semesters

CONTENT

- Introduction of Power Quality
- Voltage Quality
- Voltage Regulation
- Introduction of Harmonics
- Harmonics Mitigation Techniques

Key to Graduate Capabilities Profile

- Engineering knowledge
- Problem analysis
- Design/development of solutions
- Investigation
- Modern tool usage
- The engineer and society
- Environment and sustainability
- Ethics
- Individual and team work
- Communication
- Project management and finance
- Lifelong learning

LEARNING & TEACHING STRATEGIES

Lectures, tutorials, computer simulation, case studies, laboratory exercises, computer applications, site visits, seminars.

ASSESSMENT PLAN

Assessment Event	Weighting %	Learning Outcomes
Assignment 1	30.00	1-3
Assignment 2	30.00	4-6
Class Project	40.00	1-6

Grade Map

MAP1

- A+ A A- Pass with Distinction
- B+ B B- Pass with Merit
- C+ C C- Pass
- D Fail

Overall requirement/s to pass the course:

To pass the course, the student needs to achieve minimum grade of C- overall.

LEARNING RESOURCES

Santoso,S. Beaty, HW. Dugan.R (2012) "Electrical Power Systems Quality". McGraw-Hill Professional. 3rd edition.

For further information, contact: Te Ara Auaha - Faculty of Design & Creative Technologies

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Principal Programme: **AK3751, Bachelor of Engineering (Honours)**

Related Programme/s: **AK3566**
AK1296
AK1325

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