Module 1 (Fundamental principles of PQ) and **Module 2** (The application of PQ)

What it is about:

- International, regional and national PQ standards
- Regional regulatory practises
- Voltage waveform events (dips, swells and transients)
- Voltage and current waveform quality (Harmonics, unbalance & flicker)
- International measurement standards for PQ parameters (IEC 61000-4-30, edition 3)
- The assessment of compliance to the NRS048 part 2-2007: (case studies and tutorials)
- What is different in the NRS048 part 2-2015?
- System technical performance analysis: NRS048 as a qualitative and quantitative measure
- Reporting on PQ by writing a PQ report (case studies and tutorials)
- Mitigation of PQ concerns: what solutions are available to suppliers and users? (Case studies)
- Features of a PQ monitoring system: how much visibility of system performance is really needed?
- From PQ monitoring to PQ management: the requirements and experience from different utilities
- Monitoring of technical and non-technical losses
- The power system evolution: The smart distribution grid and disruptive technologies (case studies)

Requirements for Module 1 and 2:

- A laptop
- Basic skills with a word processor (e.g. Word) and a spreadsheet application (e.g. Excel)
- Eskom Power Quality Handbook, is useful but not compulsory: http://www.eskom.co.za/AboutElectricity/EskomPowerSeries/Pages/Our_Products.aspic
- Attitude to participate and to be without Facebook and Whatsapp for only 8 hours per day

What will be supplied?

- Electronic copy of course material
- Refreshments and a healthy lunch every day
- Internet (for the purpose of PQ)
- Laboratory equipped with scaled power systems and PQ instrumentation for hands-on practical sessions
- Site visit to industrial installation of PQ, rooftop PV and harmonic active filtering
- ECSA CPD points: 1 CPD point per day attended

Module 3: The benchmarking of PQ and writing an annual report

- Regulatory requirements and current practices in the benchmarking of PQ
- Benchmarking dip performance and calculating characteristic dip numbers
- Benchmarking of voltage waveform quality
- Analysis of recent case studies
- How to write, and how to submit an annual NERSA report
- How to write an annual report for a municipality on system technical performance
- Analysis of recent case studies