# Continuing education cell RSET

# Short Term course on

# MATLAB applications   in Power Electronic Circuits

***Offered by Department of Electrical & Electronics***

MATLAB is a powerful simulation tool used in interdisciplinary engineering fields. Power electronics has gained an important position in electrical and electronics circuits. This course is intended to provide the students with the fundamentals of MATLAB and simulation of Power Electronic circuits using MATLAB.

**Course Instructors**
1. Mr.Ginnes.K.John, DEE
2. Prof. K.R.Varmah, HOD, DEE
3. Mr.Chikku Abraham, DEE

**Course methodology**

15 hours (5 hours introduction lectures +10 hours MATLAB exercice)

**Course fee:** Rs.1500/-

**Course open to**

Students of EEE, ECE, AEI (S4 & S6)

Course Plan

I: Theory Session (5 hours)

1. Introduction to power electronics.
2. Uncontrolled rectifier circuits.
   a) Half wave rectifier with Resistive load.
   b) Half wave rectifier with R-L load.
   c) Full wave rectifier with Resistive load.
   d) Full wave rectifier with R-L load.
   e) Half wave Battery Charger with series Resistance.
   f) Half wave Battery Charger with series R-L Impedance.
   g) Full wave Battery Charger with series R-L Impedance.
3. Phase controlled rectifier circuits.
   a) Half wave Phase controlled rectifier with Resistive load.

b) Half wave Phase controlled rectifier with R-L load.
c) Full wave Phase controlled rectifier with Resistive load.
d) Full wave Phase controlled rectifier with R-L load.
e) Half wave Phase-Controlled Charger with series Resistance.
f) Full wave Phase-Controlled Charger with series Resistance.
g) Half wave Phase-Controlled Charger with series R-L impedance.
h) Full wave Phase-Controlled Charger with series R-L impedance.

II: MATLAB Session (10 hours)

1. Introduction to M file and SIMULINK.
2. Programming and simulation of uncontrolled rectifier circuits.
   a) Half wave rectifier with Resistive load.
   b) Half wave rectifier with R-L load.
   c) Full wave rectifier with Resistive load.
   d) Full wave rectifier with R-L load.
   e) Half wave Battery Charger with series Resistance.
   f) Half wave Battery Charger with series R-L Impedance.
   g) Full wave Battery Charger with series R-L Impedance.
3. Programming and simulation of Phase controlled rectifier circuits.
   a) Half wave Phase controlled rectifier with Resistive load.
   b) Half wave Phase controlled rectifier with R-L load.
   c) Full wave Phase controlled rectifier with Resistive load.
   d) Full wave Phase controlled rectifier with R-L load.
   e) Half wave Phase-Controlled Charger with series Resistance.
   f) Full wave Phase-Controlled Charger with series Resistance.
   g) Half wave Phase-Controlled Charger with series R-L impedance.
   h) Full wave Phase-Controlled Charger with series R-L impedance.