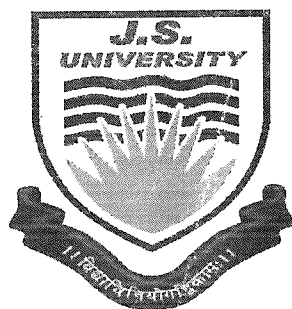


# **J.S. University, Shikohabad**

Established by UP Govt. Act No. 07 of 2015

Recognized by U.G.C. under section 2 (f) of Act-1956




## **Value Added Course**

**[VAC-011]**

### **UPS Invertor Repairing and Maintenance**

**Faculty of Engineering**

## Department of Electrical and Electronics Engineering

	J.S. University, Shikohabad Faculty of Engineering	Value Added Course
		AY: 2018-19

### UPS, Invertor, Repairing and Maintenance [VAC-011]

#### Learning Objective:

This Course will provide knowledge of repairing and maintain UPS and invertors to the students.


**Duration:** 30 Hours. (Theory and Practical)

#### Course Outcomes: -

Maximum Exposure has to be given on Practical Oriented

After completion of the course the student shall be able to:-

- 1) Understanding of Electrical Hazards and Safety.
- 2) Evaluate the basic faults in UPS, Invertors
- 3) Diagnose the Basic faults in UPS and Invertors
- 4) Developed the ability to analysis Voltage regulator supply of UPS, Invertor
- 5) Developed the ability to repair and maintain basic faults occur in UPS and Invertors

	J.S. University, Shikohabad Faculty of Engineering	Value Added Course
		AY: 2018-19

## Syllabus Outline

### 1. Module-1

#### **Introduction to Electrical & Personal Safety**

Electrical hazards- Short Circuit, Loop, High Currents, and High Voltage. Personal Safety Do-Not to Do while working, basic safety equipment

### 2. Module-2

#### **Basic of Electricity**

Single Phase, Three Phase Power, AC, DC Power, Practical Measurements of Voltage, Current, Resistance using multimeter, Testing of Earth using test lamp, Fuses-Type, rating with applications

### 3. Module-3

#### **Electronic and Electrical Components of UPS, Invertors**

Basic Passive and Active components, testing, MOSFET applications- Introduction and precautions when handling, Op-Amp- Applications, Voltage Regulators, DIAC, TRIAC, SCR and Logic gates ICs, Transformers, Relays, Fuses, SMPS, Load Limiter

### 4. Module-4

#### **Operation of UPS, Invertors**

Different types of Invertor, UPS- Single phase, Three Phase, Load wise suitability, Block Diagram, Basic Faults and diagnosis methods, Rectifying common faults, testing of major parts- Transformers, Relay, SMPS, ICs

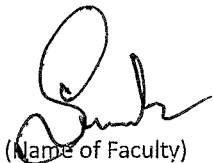
### 5. Module-5

#### **Battery Maintenance**

Lead acid battery, Li-Ion battery, Charging and discharging of battery, Simulate load test on battery, faults related to battery and diagnosis.

## References:

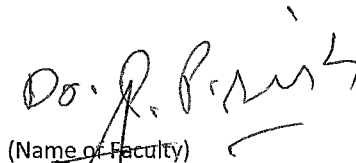
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2. Switching Power Supply Design, 3rd Ed. by Abraham Pressman (Author),
3. Uninterruptible Power Supplies Alexander King, William Knight McGraw Hill Professional
4. "UPS Maintenance and Repair: A Practical Guide" by Salman Abdul Moiz Khan (2018)
5. "Troubleshooting and Repairing Commercial Electrical Equipment" by David Herres (2018)
6. "Handbook of UPS: Maintenance and Troubleshooting" by Dennis L. Tucker (2017)
7. "Power Electronics Handbook: Devices, Circuits and Applications" by Muhammad H. Rashid (2017)
8. "Maintenance and Troubleshooting of Electronic Equipment" by Khandpur R.S. (2015)
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(Name of Faculty)

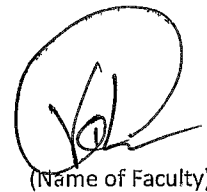
Course Coordinator

Dr. Saik  
Guduru



(Name of Faculty)

Dean Academics



(Name of Faculty)

Director/Principle/Dean of  
Faculty/Department

Dr. Adnan Qasim