
| | |
|-------------------|--|
| Program | Engineering |
| Specialization | Electrical Installations and Equipment |
| Course Number | 020303232 |
| Course Title | Electrical Protection Systems Lab |
| Credit Hours | 1 |
| Theoretical Hours | 0 |
| Practical Hours | 3 |

□ **Brief Course Description:**

This Course covers experiments on; fuses , circuit breakers, relays; operation and application of ; electromagnetic relays , electronic relays, differential relays, timers; mechanical ,thermal mercury and electronic timers, contactors.

□ **Course Objectives:**

The student should be able to ;

1. Describe the construction, operation & connection of different types of relays.
2. Describe the construction, operation & connection of circuit breakers & fuses.
3. Describe the construction, operation & connection of timers and contactors.
4. Determine the characteristics of all protection & control devices.
5. Know the requirement of protection systems.

Detailed Course Description:

| Lab Number | Unit Name | Unit Content | Time Needed |
|------------|-----------|--|-------------|
| 1. | | Experiments on single & three-phase current transformers | |
| 2. | | Experiments on summation current transformer | |
| 3 | | Experiments on single & three – phase voltage transformers | |
| 4 | | Experiment on electromagnetic overcurrent relay | |
| 5 | | Experiment on over-voltage & under-voltage relays | |
| 6 | | Experiment on earth fault relay. | |
| 7 | | Experiment on directional power relay | |
| 8 | | Experiment on differential relay | |
| 9 | | Experiment on circuit breakers | |
| 10 | | Experiment on fuses | |
| 11 | | Experiment on uninterruptible supplies | |
| 12 | | Experiment on timers & contactors | |

 Evaluation Strategies:

| | | Percentage | Date |
|----------|--------------|------------|------|
| 1. Exams | Reports | 30% | |
| | Midterm Exam | 20% | |
| | Final Exam | 50% | |
| | | | |

 Teaching Methodology:

1. Laboratory

 Textbook:

1. Manuals of each type of relays, circuit breakers, timers & contactors.
2. Manuals of current & voltage transformers.