

EE 523 Fundamental of Renewable Energy

COURSE INFORMATION

| Prerequisites | Academic Year &Level | | Teaching Methods | | | Credit Hrs. |
|---------------|----------------------|----------|------------------|----------|------|-------------|
| | Year | Semester | Lecture | Tutorial | Lab. | |
| EE 424 | 5 | 9 or 10 | 2 | 2 | - | 3 |

COURSE AIM

Differentiate between generation of electricity from fossil fuels and renewable resources. Identify the basic principles of electricity generation from wind energy systems and photovoltaic systems. Solve problems related to wind energy systems and PV systems. Identify other renewable energy systems such as wave energy, biomass and solar thermal.

COURSE WEEKLY CONTENTS

- 1 Power for sustainable future
- 2 Distributed generators and energy storage systems
- 3 Wave energy and Tidal Energy
- 4 Hydropower energy
- 5 Biomass energy / Fuel Cells
- 6 Geothermal energy
- 7 Solar energy (1) + Midterm Exam
- 8 Solar energy (2)
- 9 Solar energy (3)
- 10 Wind energy (1)
- 11 Wind energy (2)
- 12 12th Week Assessment
- 13 Wind energy (3)
- 14 Grid code
- 15 Reactive Power and renewable energy

STUDENT GRADING & ASSESSMENT

| Weeks | Exams | Assign. | Quizzes | Reports | Present. | Lab. | Total |
|---|--------------|----------------|----------------|----------------|-----------------|-------------|-------|
| 1 to 7 | 20 Midterm | ← | 10 | MARKS | | → | 30 |
| To be freely distributed among possible assessments | | | | | | | |
| 8 to 12 | ← | | 20 | MARKS | | → | 20 |
| 13 to 15 | ← | | 10 | MARKS | | → | 10 |
| 16 or 17 | 40 Final | | | | | | 40 |
| Total | Exams | Assign. | Quizzes | Reports | Present. | Lab. | 100 |

REFERENCES

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| Textbook | Leon Freris, David Infield, "Renewable Energy in Power Systems" |
| Other | Aldo V. Da Rosa, "Fundamental of Renewable Energy Processes" Thomas Ackermann, "Wind Power in Power Systems" J.A. Duffie and W.A Beckman , "Solar Engineering of Thermal processes" |