1. **Course number and name**  
EE 492: Renewable Energy Sources

2. **Credits and contact hours**  
3.0 (three lecture hours per week)

3. **Instructor’s or course coordinator’s name**  
Ali Mehrizi-Sani

4. **Text book, title, author, and year**  
*Other supplemental materials*  
Lectures will be recorded using WSU’s Panopto system.

5. **Specific course information**  
a. **Catalog description:**  
Design of electrical generation plants using wind, solar and other renewable energy sources including technical, environmental and economic aspects.  
b. **Prerequisites or co-requisites:**  
E E 361 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering.

6. **Specific goals for the course**  
At the end of this course, students must be able to:  
• Calculate cost of electricity generation (1) (1a, 1b, 1c, 1d, 1e, 1f);  
• Analyze a PV, wind, or fuel cell system (1, 2) (1a, 1b, 1c, 1d, 1e, 1f);  
• Analyze and solve problems related to a renewable energy generation system (1, 2, 5) (1a, 1b, 1c);  
• Compare different renewable energy generation technologies (1, 2) (6a, 6b, 6c, 6d);  
• Build a renewables related prototype and present/defend the design; (1, 2, 3, 5, 6) (1a-1f, 3a, 3b, 3c, 3d)

7. **Brief list of topics to be covered**  
- Energy resources, review, electric power generation, energy usage and sustainability;  
- Nonrenewable energy sources: Reserves, environmental impacts, policies, and economic cost;  
- Renewable energy resources: Energy density, economics, environmental and social costs;  
- Solar modules: Operation principles, IV characteristics, effects of temperature and shading;  
- Batteries;  
- Wind Energy: Components and operation principles, output power estimation and regulation;
● Simulation of PV systems.