Revised 12/15/2017

WESEP Thrust Area Courses

1. **Wind resource characterization and aerodynamics of wind farms**

AER E 481 Advanced Wind Energy: Technology and Design

AER E 541 Incompressible flow aerodynamics

AER E 545 Advance Experimental Technique for Thermal-Fluid Studies.

AER E/ME 546 Comp fluid mechanics/heat transfer

AER E 547 Computational Fluid Mechanics and Heat Transfer II

AER E 570 Wind engineering

AER E 572 Turbulence

AER E 583X Aeroacoustics

AgEds 451 Agricultural law

Agron 505 Environmental biophysics

Agron 541 Applied Agricultural Meteorology

EE 553 Power system operation

EnSci 381/382 Environmental systems I, II

ME 538 Advanced Fluid Flow

Mteor 507 Mesoscale meteorology

Mteor 542 Physical Meteorology

Mteor 543 Dynamic Meteorology

Mteor 605 Micrometeorology

2. **Wind energy conversion system and grid operations**

AER E 422 Aeroelasticity

Aer E/EM 514 Advanced Mechanics of Materials

AerE 525 Finite Element Analysis

AER E 541 Incompressible flow aerodynamics

AER E /ME 546 Comp fluid mechanics/heat transfer

CE 541 Dynamic Analysis of Structures

CE542 Structural Analysis by Finite Elements

EE 519 Magnetism and Magnetic Materials

EE 552 Power system planning

EE 553 Power system operation

EE 554 Power system dynamics

EE 556 Power electronic systems

EE/AER E/ME 577 Linear systems

EE 578 Nonlinear systems

IE 510 Network analysis

IE 534 Linear programming

IE 631 Nonlinear programming

IE 632 Integer programming

ME 517 Advanced machine design

ME 543 Introduction to random vibrations and nonlinear dynamics

ME/EM 564 Fracture and Fatigue

3. **Manufacturing, construction, and supply chain**

AER E 522 Design and Analysis of Composite Materials

AER E 525 Finite element analysis

CE 460 Foundation engineering

CE 533 Structural steel design II

CE 534 Reinforced concrete design II

CE 535 Prestressed concrete structures

CE 541 Dynamic analysis of structures

CE542 Structural Analysis by Finite Elements

CE 561 Applied foundation engineering

EE 516, Computational Methods in Electromagnetics

EM 514. Advanced Mechanics of Materials

IE 503 Intro to sustainable production systems

IE 505X Advanced Engineering Economy for Complex Engineering Projects

IE 514 Production scheduling

IE 541 Inventory control & production planning

IE 543 Wind energy manufacturing

IE 546 Geometric variability in manufacturing

IE 549 Computer aided design & manufacturing

ME 520 Material & manufacturing in design

ME 525 Optimization Methods for Complex Designs

ME/EM 564 Fracture and fatigue

MSE 554 Polymer composites & processing

MSE 569 Mechanics of composite/combined materials

SCM 522 Supply chain planning & control systems

4. **Turbine reliability & health monitoring**

CE 549X. Structural Health Monitoring

AER E /EM 514 Advanced mechanics of materials

E M 517 Experimental Mechanics

EM/MSE 550 Fundamentals of NDE

EM 551 Fundamentals of ultrasonic NDE engineering

MSE/EE 588 Eddy current NDE

Stat 500 Statistical methods I

Stat 506 Spatial statistics

Stat 510 Statistical Methods II

Stat 520 Statistical Methods III

Stat 533 Reliability

Stat 542 Theory or probability and statistics I

Stat 543 Theory of probability and statistics II

Stat 551 Time series analysis

Stat 606 Advanced Spatial Statistics

5. **Economics, policy & public perception**

Econ 418 Introduction to game theory

Econ 501 Microeconomics

Econ 537 Commodity markets: analysis and strategy

Econ 580 Intermediate environmental /resource economics

Econ 581 Advanced environmental economics

JIMC 547 Science communication

JIMC 560 Risk perception and communication

ME 510 Economics and Policy of Engineered Energy Systems

Soc 415 Sociology of technology

Soc 549 Sociology of the environment