AOE/ESM 4084 "Engineering Design Optimization" Review II

• Unconstrained Functions of *N*-variables (Entire Chapter 3)

•General search methods and strategy (3-1.1, -1.2, -1.3)

•Zero-Order Methods (3-2)

- Nelder and Mead's Seq. Simplex algorithm (not in the book)
- Powel's Conjugate Directions method (3-2.2)
- Random Search (3-2.1) (reading assignment)

•First-Order Methods (3-3)

- Steepest Descent (3-3.1)
- The method of Conjugate Gradient, Fletcher-Reeves method (3-3.2)
- Quasi-Newton (Variable Metric) methods (3-3.3)

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- Unconstrained Functions of N-variables, continued
 - •Second-Order Methods (3-4)
 - Newton's Method (3-4.1)
 - •Scaling of the variables (3-5) (reading assignment)
 - •Convergence Criteria (3-6) (reading assignment)
 - Max number of iterations (3-6.1)
 - Change in the objective function (3-6.2)
 - The Kuhn-Tucker Conditions (3-6.3)
 - The Convergence algorithm (3-6.4)

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• Constrained Functions of N-variables- Indirect (Entire Ctr. 5)

•The Exterior Penalty Function (5-2)

•The Interior Penalty Function (5-3)

- •The Extended Interior Penalty Function (5-4)
 - The linear extended penalty function (5-4.1)
 - The quadratic extended penalty function (5-4.2)
 - The variable penalty function (5-4.3) (NOT RESPONSIBLE)

•The log Barrier Function (5-5) (NOT RESPONSIBLE)

•READING ASSIGNMENT FOR THE TEST (5-6, -7, -8)

•The Augmented Lagrange Multiplier Method (5-9)

- Equality constrained problems (5-9.1)
- Inequality constrained problems (5-9.2)
- General constrained problems (5-9.3)

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