

# PHYS 485

## String Theory I

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**Schedule:** To be decided

### **Grading:**

There will be regular homework assignments and a final assignment. There may be short open book in class examinations.

### **Textbooks:**

A first course in String Theory, Barton Zwiebach, Cambridge University Press, 2004.

### **Reference Books:**

Superstring Theory, Vol.1, M.B. Green, J.H. Schwarz, E.Witten, Cambridge University Press, 1987

D- Branes, C.V.Johnson, Cambridge University Press, 2003

### **Course Syllabus:**

- Review of special relativity and electromagnetism,
- Relativistic point particle,
- Relativistic strings, Nambu-Goto action,
- Equations of motion, boundary conditions, and a preview of D-branes
- String parameterization and classical motion,
- World-sheet currents, conserved currents on the world-sheet
- Light-cone gauge formulation of particles and fields
- Light-cone gauge formulation of strings
- Wave-equation and mode expansions
- Quantization of the relativistic point particle,
- Quantization of the relativistic open strings in the light-cone gauge
- Quantization of the relativistic closed strings in the light-cone gauge
- Virasoro operators and Virasoro algebra
- Aspects of covariant quantization.