SPRING 2021 ENG EC500 L6 “Plasma Engineering and Technologies”

**Lecturer:** Professor Min-Chang Lee (mclee@bu.edu)

**Lectures:** Monday/Wednesday, 2:30 – 4:15 PM (NIP 320)
Office hours follow 4:30 – 5:30 PM.
Additional hours will be scheduled in due course.

**Textbooks:**

**Course description:**

1. **Course Goals:** “Teaching fundamentals of plasma science/engineering and experiments as well as selected technologies including plasma photonics and nanotechnology, plasma medicine, spacecraft propulsion, laser and magnetic fusion, and solar powered microwave transmission systems.”

2. **Course Topics:** “Plasma fundamentals, plasma waves, plasma-electromagnetic wave and plasma-electrostatic wave interactions, diagnostic techniques in plasmas, plasma-based technologies, such as nanotechnology, photonics, plasma medicine, spacecraft propulsion, laser and magnetic fusion, and solar powered microwave transmission systems.”

3. **Prerequisite:** ENG EC455 “Electromagnetics Systems” or equivalent course.
   Electrodynamics is the background knowledge for the “Plasma Engineering and Technologies” course. Hence, Maxwell equations and some related time-varying electromagnetic phenomena in a medium will be reviewed. However, plasma as a quasi-neutral medium with charged particles behaves differently from a magnetic material with a permeability, while it is still appropriate to derive a plasma dielectric constant. These distinctive features will be elaborated in this course at the beginning.
(4) **Grading Policy**: Homework: 20%, Mid-term exam 20%, Research report 20%, Final exam: 40%.
Homework will be collected in the class.
Late homework will not be accepted.

(5) **Zoom Link**: 

(A) For regular dates on Mondays/Wednesdays: 
https://bostonu.zoom.us/meeting/register/tJAvcuCrqT0jHtyKPlkC_1OetaIK1RWO7pfX

(B) For Feb. 16 (a Tuesday) following Monday’s schedule 
https://bostonu.zoom.us/j/95816254239?pwd=NzNiUTRZN21IcUlDbnoxYXQyMVFyQT09