

# [ECE 8920] *Special Problems*

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## Instructor

Dr. Judson D. Ryckman

## Email

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(864) 656-5907

## Office Location

Riggs Hall, 207C  
Duke Innovation, 101C

## Office Hours

'Open door policy' or by  
Appointment

## Course Overview

This is a special problems course offered for 3 hours of credit in Spring 2020. The objective of this course is to carry out independent graduate level investigations and research in advanced photonic biosensors, **extraneous to the student's core PhD dissertation research**, under the advisement of Dr. Ryckman, and to report technical findings. Weekly discussions are to be held to monitor and discuss progress toward the problem(s). At the end of the semester, a final report documenting the completed work is required.

## Special Problems

The assignment is to perform research which seeks to study waveguide biosensors in a Fabry Perot configuration. The goal of the work is to study and develop a new sensing methodology based on tracking the free-spectral range and extracting the group index of the waveguide biosensor. In particular, techniques to amplify the group index sensitivity and optimize the sensors figure of merit are targeted. It is expected that the final report should achieve the content and quality of a manuscript which can be submitted to a peer reviewed journal in the field of photonics and/or biosensing. Both theoretical and experimental investigations are required to complete this special problem. The grade will be determined based on attendance to 1:1 meetings (25%) and the final report grade (75%).

## Course Resources

- Google Scholar: <https://scholar.google.com/>

## Academic Integrity Policy

"As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a "high seminary of learning." Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form."

When, in the opinion of a course instructor, there is evidence that a student has committed an act of academic dishonesty, that instructor will make a formal written charge of academic dishonesty to the Associate Dean of Undergraduate Studies.

## Accommodations for Students with Disabilities

Clemson University values the diversity of our student body as a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources. Students who experience a barrier to full access to this class should let the professor know, and make an appointment to meet with a staff member in Student Accessibility Services as soon as possible. You can make an appointment by calling 864-656-6848, by emailing [studentaccess@lists.clemson.edu](mailto:studentaccess@lists.clemson.edu), or by visiting Suite 239 in the Academic Success Center building. Appointments are strongly encouraged – drop-ins will be seen if at all possible, but there could be a significant wait due to scheduled appointments. Students who receive Academic Access Letters are strongly encouraged to request, obtain and present these to their professors as early in the semester as possible so that accommodations can be made in a timely manner. It is the student's responsibility to follow this process each semester. You can access further information here: <http://www.clemson.edu/campus-life/campus-services/sds/>.