

**EEL 5490    Class #22158**  
**EEL 4495    Class #26815**

**LIGHTNING**  
Spring 2021

**Instructor:**    Dr. Vladimir A. Rakov, NEB 553  
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**This course will be taught 100% online, including  
Lectures, Tests, and Office Hours**

**Lectures (via Zoom):** MWF, 7<sup>th</sup> period (1:55 – 2:45 p.m.)

**Rakov's Office Hours:** M, W, F, 2:55-3:55 p.m. (via Zoom)

**Teaching**  
**Assistant:**    Ziqin Ding  
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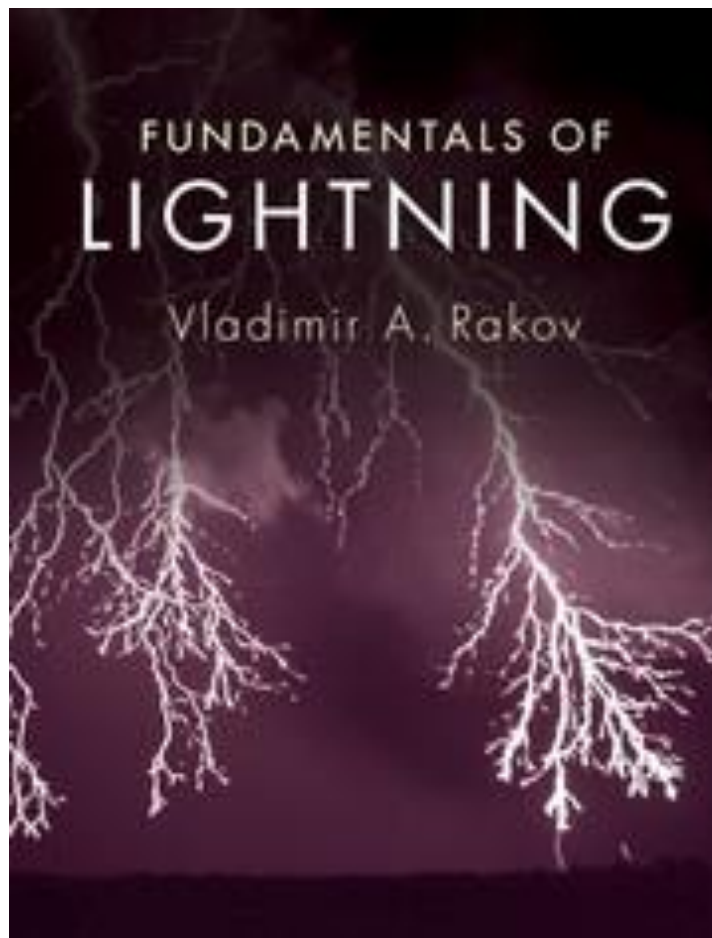
**TA Office Hours:** Thursday, 3:30-4:30 p.m. (via Zoom)

**Course Website:**  
<http://www.rakov.ece.ufl.edu/teaching/5490/5490.html>

**Text:**

Rakov, V.A. **Fundamentals of Lightning (FOL)**,  
Cambridge University Press, ISBN: 9781139680370,  
2016.

<https://doi.org/10.1017/CBO9781139680370>



Rakov, V.A., **Lightning, Course Packet (Lecture Slides)**, available at:

<http://www.rakov.ece.ufl.edu/teaching/5490/5490.html>

## EEL 5490/4495    Lightning    (Spring 2021)

Course Sections	Number of Lectures	HW Due (Canvas)	Test (Honor-lock)	Section in Course Packet	Chapter/ Sections in Text (FOL)
<b>Introduction</b>	<b>1</b>				
1. Types of lightning discharges and lightning terminology	4	HA1 01/25	T1 01/27	1	1, App. 1, 4
2. Incidence of lightning to areas and structures	4	HA2 02/05	T2 02/08	2	2, Sect. 9.3
3. Electrical structure of thunderstorm clouds	6	HA3 02/22	T3 02/24	3	3, App. 2
4a. Properties of the negative lightning discharge to ground - I	5	HA4 03/08	T4 03/10	4a	4.1-4.3, 4.6, 4.10
4b. Properties of the negative lightning discharge to ground – II	4	HA5 03/19	T5 03/22	4b	4.4-4.5, 4.7-4.10, 9.3

Course Sections	Number of Lectures	HW Due (Canvas)	Test (Honorlock)	Section in Course Packet	Chapter/Sections in Text (FOL)
5. Calculation of lightning electromagnetic fields	4	HA6 04/14	T6 04/16	5	5, App. 3
6. Modeling of lightning processes	3			-	6
7. Measurement of lightning electric and magnetic fields	2			-	7
8. Lightning locating systems and lightning protection	2	-	-	-	8,9
Review	1			1-9	1-9, App. 1-4
Final Exam (via Honorlock)	-	-	Apr. 28 (W) 12:30-2:30 p.m.	1-9	1-9, App. 1-4

# **EEL 5490/4495, Lightning**

## **Spring 2021**

Tests. Six tests are graded by TA, and each test accounts for **10%** of the overall grade for the course so that all six tests account for **60%** of the overall grade.

Home assignments. Six home assignments are given. Homework turned in after **1:55 p.m.** on the due date is not accepted. Homework is graded by TA, and each homework accounts for **2%** of the overall grade for the course so that all six homeworks account for **12%** of the overall grade.

Final exam is comprehensive and accounts for **28%** of the overall grade for the course. Problems on the final exam are of the same level of difficulty as those on the home assignments and tests.

**Overall grade for the course is computed as:**

$$\underline{G = 0.1(T1 + T2 + \dots + T6) + 0.02(HW1 + HW2 + \dots + HW6) + 0.28F,}$$

**where Ts are test grades, HWs are homework grades, and F is the Final Exam grade.**

**Conversion of percent grade to letter grade:**

Percent	Grade	Grade Points
<b><math>\geq 90</math></b>	<b>A</b>	<b>4.00</b>
<b><math>\geq 86.67</math></b>	<b>A-</b>	<b>3.67</b>
<b><math>\geq 83.33</math></b>	<b>B+</b>	<b>3.33</b>
<b><math>\geq 80</math></b>	<b>B</b>	<b>3.00</b>
<b><math>\geq 76.67</math></b>	<b>B-</b>	<b>2.67</b>
<b><math>\geq 73.33</math></b>	<b>C+</b>	<b>2.33</b>
<b><math>\geq 70</math></b>	<b>C</b>	<b>2.00</b>
<b><math>\geq 66.67</math></b>	<b>C-</b>	<b>1.67</b>
<b><math>\geq 63.33</math></b>	<b>D+</b>	<b>1.33</b>
<b><math>\geq 60</math></b>	<b>D</b>	<b>1.00</b>
<b><math>\geq 56.67</math></b>	<b>D-</b>	<b>0.67</b>
<b><math>&lt; 56.67</math></b>	<b>E</b>	<b>0.00</b>