EEL 5490  Section 226D  Class #13176  
EEL 4495  Section 226B  Class #13184

LIGHTNING
Fall 2018

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

3 credits, M W F, 6th period (12:50 – 1:40 p.m.), 328 BEN

Text:


Rakov, V.A., Lightning, Course Packet (available at
http://www.rakov.ece.ufl.edu/teaching/5490/5490.html
### Course Sections

<table>
<thead>
<tr>
<th>Course Sections</th>
<th>Number of Lectures</th>
<th>HW Due</th>
<th>Test</th>
<th>Section in Course Packet</th>
<th>Chapter/ Sections in Text (FOL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Types of lightning discharges and lightning terminology</td>
<td>4</td>
<td>HA1 09/05</td>
<td>T1 09/10</td>
<td>1</td>
<td>1, App. 1, 4</td>
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<tr>
<td>2. Incidence of lightning to areas and structures</td>
<td>4</td>
<td>HA2 09/17</td>
<td>T2 09/19</td>
<td>2</td>
<td>2, Sect. 9.3</td>
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<tr>
<td>3. Electrical structure of thunderstorm clouds</td>
<td>6</td>
<td>HA3 10/03</td>
<td>T3 10/05</td>
<td>3</td>
<td>3, App. 2</td>
</tr>
<tr>
<td>4a. Properties of the negative lightning discharge to ground - I</td>
<td>5</td>
<td>HA4 10/17</td>
<td>T4 10/19</td>
<td>4a</td>
<td>4.1-4.3, 4.6, 4.10</td>
</tr>
<tr>
<td>4b. Properties of the negative lightning discharge to ground – II</td>
<td>4</td>
<td>HA5 10/29</td>
<td>T5 10/31</td>
<td>4b</td>
<td>4.4-4.5, 4.7-4.10, 9.3</td>
</tr>
</tbody>
</table>

**Notes:**
- HW Due: 09/05, 09/17, 10/03, 10/17, 10/29
- Test: T1 09/10 (Take-home), T2 09/19, T3 10/05, T4 10/19, T5 10/31
- Section in Course Packet: 1, 2, 3, 4a, 4b
<table>
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<tbody>
<tr>
<td>5. Calculation of lightning electromagnetic fields</td>
<td>5</td>
<td>HA6 12/03</td>
<td>T6 12/05</td>
<td>5</td>
<td>5, App. 3</td>
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<tr>
<td>6. Modeling of lightning processes</td>
<td>3</td>
<td></td>
<td></td>
<td>-</td>
<td>6</td>
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<tr>
<td>7. Measurement of lightning electric and magnetic fields</td>
<td>2</td>
<td></td>
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<td>-</td>
<td>7</td>
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<tr>
<td>8. Lightning locating systems and lightning protection</td>
<td>1</td>
<td></td>
<td></td>
<td>-</td>
<td>8,9</td>
</tr>
<tr>
<td><strong>Final Exam, 13D (328 BEN)</strong></td>
<td>-</td>
<td></td>
<td>Dec. 13 (Thursday) 3:00 – 5:00 p.m.</td>
<td>1-9</td>
<td>1-9, App. 1-4</td>
</tr>
</tbody>
</table>
In-class tests. Six tests are graded by TA, and each test accounts for 10% of the overall grade for the course so that all five in-class tests account for 60% of the overall grade.

Home assignments. Six home assignments are given. Home work turned in after 1 p.m. on the due date is not accepted. Home work is graded by TA, and each assignment accounts for 2% of the overall grade for the course so that all five home works 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.

\[ G = 0.1(T_1 + T_2 + \ldots + T_6) + 0.02(HW_1 + HW_2 + \ldots + HW_6) + 0.28F \]

G = Overall grade for the course; T = Test grade; HW = Home work grade; F = Final exam grade

\[ \geq 90\% \rightarrow A; \ \geq 86.67\% \rightarrow A-; \ \geq 83.33\% \rightarrow B+; \ \geq 80\% \rightarrow B; \]
\[ \geq 76.67\% \rightarrow B-; \ \geq 73.33\% \rightarrow C+; \ \geq 70\% \rightarrow C; \ \geq 66.67\% \rightarrow C-; \]
\[ \geq 63.33\% \rightarrow D+; \ \geq 60\% \rightarrow D; \ \geq 56.67\% \rightarrow D-; \ < 56.67\% \rightarrow E \]