FE Exam for Computer & Electrical Engineers

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Why Pursue FE?

- Acceptance from other engineering disciplines
- Entrepreneurship: Starting your own business as an engineer - Private Practice
- Finding a job
- Quality assurance
Why don’t students take it?

- Don’t believe they can pass it
- Don’t see the importance of it
- Don’t think it will help them
Student Fears

• Only Taken a fraction of the courses

• No Computer Engineering afternoon exam
  – Other Disciplines Afternoon Exam (NOT RECOMMENDED)
  – Electrical Engineering Afternoon Exam

• Should be seen as challenge not obstacle
Handling Student Fears: Early Academic Experience

- Take their elective courses seriously
- Focus not only on the grade but on the knowledge gained
- Not an easy task – Early Academic Experience is time when “Other” Matters are More Concerning
Handling Student Fears: Middle Academic Experience

- Don’t just take the easiest elective
- Use science elective for Chemistry II or other course covered by the FE
- Use free elective for an additional math course or a course in a different field of engineering
Handling Student Fears: Late Academic Experience

• Reassurance that it is never too late

• Encouragement to sign up for an FE review course
FE Examination Content

• 8 Hour Exam - Closed Notes
  – 4 Hour Morning Session on General Topics
  – 4 Hour Afternoon Session in Choice of:
    General, Chemical, Civil, Electrical, Environmental, Industrial, or Mechanical

• 180 Multiple-choice Questions
• 70% to Pass (Based on Equivalent Cut Score)
• Reference Material Supplied
FE Examination Security

- Use Calculators from Supplied List Only
- No Notes or Books Allowed
- Reference Manual and Reference Equation List Provided
- Mechanical Pencils Provided
- All Jurisdictions use NCEES Exam, but Individual State Boards may have Additional Restrictions
### Morning Session Specification

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>PERCENTAGE</th>
<th>QUESTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics</td>
<td>15%</td>
<td>18</td>
</tr>
<tr>
<td>Probability/Statistics</td>
<td>7%</td>
<td>8-9</td>
</tr>
<tr>
<td>Chemistry</td>
<td>9%</td>
<td>10-11</td>
</tr>
<tr>
<td>Computers</td>
<td>7%</td>
<td>8-9</td>
</tr>
<tr>
<td>Ethics/Business Practice</td>
<td>7%</td>
<td>8-9</td>
</tr>
<tr>
<td>Engineering Economics</td>
<td>8%</td>
<td>9-10</td>
</tr>
<tr>
<td>Statics and Dynamics</td>
<td>10%</td>
<td>12</td>
</tr>
<tr>
<td>Strength of Materials</td>
<td>7%</td>
<td>8-9</td>
</tr>
<tr>
<td>Material Properties</td>
<td>7%</td>
<td>8-9</td>
</tr>
<tr>
<td>Fluid Mechanics</td>
<td>7%</td>
<td>8-9</td>
</tr>
<tr>
<td>Electricity/Magnetism</td>
<td>9%</td>
<td>10-11</td>
</tr>
<tr>
<td>Thermodynamics</td>
<td>7%</td>
<td>8-9</td>
</tr>
</tbody>
</table>

**120 Questions in Total - Average of 2 Minutes/Question**

**44-47 Questions**  **19-21 Questions**  **44-48 Questions**
Afternoon Session Specification

Most Computer Engineering Students Choose Either the Electrical or General Afternoon Question Set

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>PERCENTAGE</th>
<th>QUESTIONS</th>
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</thead>
<tbody>
<tr>
<td>Circuits</td>
<td>16%</td>
<td>10</td>
</tr>
<tr>
<td>Power</td>
<td>13%</td>
<td>8</td>
</tr>
<tr>
<td>Electromagnetics</td>
<td>7%</td>
<td>4</td>
</tr>
<tr>
<td>Control Systems</td>
<td>10%</td>
<td>6</td>
</tr>
<tr>
<td>Communications</td>
<td>9%</td>
<td>5</td>
</tr>
<tr>
<td>Signal Processing</td>
<td>8%</td>
<td>5</td>
</tr>
<tr>
<td>Electronics</td>
<td>15%</td>
<td>9</td>
</tr>
<tr>
<td>Digital Systems</td>
<td>12%</td>
<td>7</td>
</tr>
<tr>
<td>Computer Systems</td>
<td>10%</td>
<td>6</td>
</tr>
</tbody>
</table>

Electrical Afternoon Session
### Afternoon Session Specification

Most Computer Engineering Students Choose Either the Electrical or Other Disciplines Afternoon Question Set

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>PERCENTAGE</th>
<th>QUESTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Engineering Mathematics</td>
<td>10%</td>
<td>6</td>
</tr>
<tr>
<td>Engineering Probability/Statistics</td>
<td>9%</td>
<td>5</td>
</tr>
<tr>
<td>Biology</td>
<td>5%</td>
<td>3</td>
</tr>
<tr>
<td>Control Systems</td>
<td>10%</td>
<td>6</td>
</tr>
<tr>
<td>Engineering Economics</td>
<td>13%</td>
<td>8</td>
</tr>
<tr>
<td>Engineering Mechanics</td>
<td>11%</td>
<td>7</td>
</tr>
<tr>
<td>Engineering Materials</td>
<td>15%</td>
<td>9</td>
</tr>
<tr>
<td>Fluids</td>
<td>12%</td>
<td>7</td>
</tr>
<tr>
<td>Thermodynamics/Heat Transfer</td>
<td>15%</td>
<td>9</td>
</tr>
</tbody>
</table>

**Other Disciplines Afternoon Session**
8 Step Plan to Pass the FE

- **Step 1**
  - Sign up for review course
  - Buy a FE study guide
- **Step 2**
  - Take a sample exam
- **Step 3**
  - Strengths
  - Weaknesses
8 Step Plan to Pass the FE

• Step 4
  – Spend little time on area of strengths

• Step 5
  – Spend most of your time on areas that are
    • Rusty
    • Feel that you can master in the allotted time
8 Step Plan to Pass the FE

- **Step 6**
  - Take a second practice exam a week before FE
  - Identify areas that need a little more work
- **Step 7**
  - Work only on areas identified in Step 6
- **Step 8**
  - Stop studying an hour before going to sleep the night before to relax
  - Get a full 8 hours of sleep
Students should Take the FE

- It is important - Professionalism
- Real life examples of the need of PE
- Gives students a valuable Credential
- Not Intended to test your degree of mastery of all subject areas but as test of minimal competence to ensure *public safety*
Review NCEES Website

- http://ncees.org
- Go to Exams Section
  - Test Specifications
  - Familiarize yourself with Reference Guide
  - Obtain & Use Approved Calculator
- Check Website Periodically
Conclusion

• Importance of being licensed PE:
  – public health, welfare & safety

• Engineers are Professionals
  – let’s behave like professionals

• Licensing is a PRIVILEGE from a Governing Body – not a RIGHT

• Holding a Degree in Engineering Means you Studied the Field – Holding a License Means you ARE an Engineer