EE303: Communication Systems

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Topics & Course Information
Topics

1. Introductory Concepts
2. Digital Communications - An Overview of Fundamentals
   1. Information Sources,
   2. Communication Channels & Criteria and Limits
   3. Wireless Communications
   4. Digital Modulators, Demodulators and Line Codes
   5. Basics of Spread Spectrum Systems
   6. Principles of Direct-Sequence and Frequency-Hopping Spread Spectrum
   7. Principles of CDMA
3. Digital Communications - System Examples
   1. PCM and PSTN, WiFi, 3G
4. Principles of Multi-Carrier Digital Comm Systems
Useful Connections

- Professor Manikas:  
  http://skynet.ee.imperial.ac.uk/manikas.html

- Lecture Notes:  
  http://skynet.ee.imperial.ac.uk/notes/notes.html

- Following course on Twitter:  
  @amanikas

- Blackboard:  
  https://bb.imperial.ac.uk

- Panopto (video recordings of the Lectures):  
  panopto.imperial.ac.uk  
  directory: EE3-03 15-16
Coursework (optional)

- The coursework is optional and partitioned into 2 parts.
  - The first part involves three computer-based "tests"
  - The second part is a software based assignment using MATLAB.

- Table-1 shows the weights per coursework-part.

<table>
<thead>
<tr>
<th>Part</th>
<th>Weight</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part-1</td>
<td>45% –&gt;0%</td>
<td>15% per test –&gt;0%</td>
</tr>
<tr>
<td>Part-2</td>
<td>55% –&gt;0%</td>
<td>MATLAB based investigation</td>
</tr>
</tbody>
</table>

Important Notes:

1. Past Examination Papers are not available for this course.
2. More than 50 representative problems and their solutions, covering all topics, are available and support this course,
Table-2 shows the Autumn Term academic weeks (A1-A11) and the deadlines of the coursework.

<table>
<thead>
<tr>
<th>Academic Weeks - Autumn Term</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Week-A2</td>
<td>12 Oct. 2015 - 18 Oct. 2015, Lectures</td>
</tr>
<tr>
<td>Week-A4</td>
<td>26 Oct. 2015 - 1 Nov. 2015, Lectures</td>
</tr>
<tr>
<td>Week-A5</td>
<td>2 Nov. 2015 - 8 Nov. 2015, Lectures and Test-1</td>
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<tr>
<td>Week-A6</td>
<td>9 Nov. 2015 - 15 Nov. 2015, Lectures and Test-2</td>
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<tr>
<td>Week-A7</td>
<td>16 Nov. 2015 - 22 Nov. 2015, Lectures and Test-3</td>
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<tr>
<td>Week-A8</td>
<td>23 Nov. 2015 - 29 Nov. 2015, Class (Problem Sheets)</td>
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<tr>
<td>Week-A9</td>
<td>30 Nov. 2015 - 6 Dec. 2015, Class (Problem Sheets)</td>
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<tr>
<td>Week-A10</td>
<td>7 Dec. 2015 - 13 Dec. 2015, Exams</td>
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Books

Bernard Sclar
"Digital Communications - Fundamentals and Applications"
Prentice-Hall, 1988 or a more recent version.

I. A. Glover & P.M. Grant,
"Digital Communications",

S. Haykin,
"Communication Systems",

R.E. Ziemer & R.L. Peterson,
"Introduction to Digital Communications",

R.L.Peterson, R.E.Ziemer, D.E. Borth,
"Introduction to Spread Spectrum Communications",