Course No: Math 514  
Title: Advanced Mathematical Methods  
Credit: 3-0-3  
Text Book Reference:  
James P. Keener, Principles of Applied Mathematics, Addison Wesley Publishing Company  
Brian Davis, Integral transforms and their applications, Springer 2002  

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Section</th>
<th>Topics</th>
</tr>
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<td>1-2</td>
<td>January, 6-17</td>
<td>6.1, 6.2</td>
<td>Review of Complex Integration. Branch points and integration along branch cuts</td>
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<td>3-4</td>
<td>January, 20-31</td>
<td>7.2</td>
<td>Fourier and Laplace transforms, analyticity of transforms and inversion</td>
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<td>5-6</td>
<td>February, 3-14</td>
<td>Additional material</td>
<td>Applications of Fourier and Laplace transforms</td>
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**Major I:** Tuesday 19 Feb 2019 at 7 PM  
7  February, 17-21  
8  February, 24-28  
9  March, 3-7  
10 March, 10-14  
11 March, 17-21  

**Topics**  
7.3  Hankel transform, properties and applications  
Additional material  
3.1 + Add. material  
Additional material  
Additional material  

**Major II:** Tuesday 26 March 2019 at 7 PM  
12 March, 24-28  
13 March 31 - April 4  
14-15 April 7 - 18  

**Topics**  
6.3  Conformal mappings, applications  
10.1  Little $o$ and big $O$ symbols, asymptotic functions  
10.2-10.3  Asymptotic sequences and series. Asymptotic approximation of integrals  

**Final Exam:** Thursday 25 April 2019 at 7 PM  

**Evaluation Scheme:**  
Major Exam I and II 25% each  
Assignments/Attendance 15%  
Final 35%  

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