

<b>CLASS: B. Sc (Information technology)</b>		<b>Semester – II</b>
<b>SUBJECT: Applied Mathematics – II (USIT202)</b>		
<b>Periods per week</b>	<b>Lectures – 5</b>	<b>3 Credits</b>

Unit – I	<b>Complex Numbers:</b> Cartesian, Polar & Exponential form, De-Moivre's theorem, Hyperbolic functions, Logarithms of Complex numbers	<b>8 Lect.</b>
Unit- II	<b>Complex Variables :</b> Cauchy Riemann Equations, , Conformal Mapping and Bilinear Mapping, concept of Line Integral, Riemann Integral, Singularities –Poles, Evaluation of Residues theorem.	<b>8 Lect.</b>
Unit – III	<b>Laplace Transform:</b> Introduction, Definition, Properties of Laplace Transform, Laplace Transform of standard function. <b>Inverse Laplace Transform:</b> Inverse Laplace Transform , Methods of obtaining Inverse Laplace transform, Laplace transform of Periodic Functions, Heavyside Unit-step Function, Dirac-delta function (Unit Impulse Function), Application of Inverse Laplace transform to solve differential equations.	<b>8 Lect.</b>
Unit – IV	Differentiation under Integral sign, Beta and Gamma Functions, Properties and Duplication Formula, Error Functions	<b>8 Lect.</b>
Unit – V	<b>Fourier Series:</b> Fourier Series, Change of Interval, Even and odd functions, Half range expansions. <b>Fourier Transform and Inverse Fourier Transform:</b> Fourier transform of Even and Odd functions, Fourier Transform of sine and cosine functions	<b>8 Lect.</b>
Unit – VI	<b>Integral Calculus:</b> Double Integral, Area, Triple Integral, Volume	<b>8 Lect.</b>

### References:

Differential Calculus by Shanti Narayan.

B. S. Grewal, “Higher Engineering Mathematics.

Advanced Engineering Mathematics: R.K.Jain, S.R.K. Iyengar, Narosa Publishing House.

Engineering Mathematics : T Veerajan, Tata McGraw-Hill

Integral Transforms: A. R. Vasishta, Dr. R.K. Gupta, Krishna Prakashan Mandir.

### Term Work for USIT202

- i) Assignments: Should contain at least 2 assignments covering the Syllabus.
- ii) Class Tests: One. Also Known as Unit Test or In-Semester Examinations
- iii) Tutorial : Minimum Three tutorials covering the syllabus

**Practicals (USIT2P2):**

<b>Problem Solving</b>	<b>3 Lectures per Week (1 Credit)</b>
<p>List of Problems</p> <ul style="list-style-type: none"><li>i) Problem solving based on Complex Numbers</li><li>ii) Problem solving based on Complex Variables</li><li>iii) Problem solving based on Laplace Transforms</li><li>iv) Problem solving based on Inverse Laplace Transforms</li><li>v) Problem solving based on Differentiation under the integral sign</li><li>vi) Problem solving based on Beta and gamma functions</li><li>vii) Problem solving based on error functions</li><li>viii) Problem solving based on Fourier series</li><li>ix) Problem solving based on Fourier transforms</li><li>x) Problem solving based on double integrals and area</li><li>xi) Problem solving based on triple integrals</li></ul>	