Diploma

Semester – 2

020010XXX / 020020XXX / 020030XXX / 020040XXX

MATHEMATICS – II

EFFECTIVE FROM January - 2016

Syllabus version: 1.02
Objective of the course:
To study the fundamental concepts of differentiation, integration, complex numbers and statistics related to engineering problems, so that students get sound knowledge and important aspects of the subject.

Student learning outcomes/objectives:
At the closing stage of the course, the students will be able to understand the basics and applications of differentiation and integration, complex numbers and statistics in their respective fields.

Instructional methods and pedagogy:
Faculty members shall explain in a class room using black board and multimedia projector through Power Point presentation. Lectures/discussions method shall be fruitful. Assignments based course content shall be given to students. It should be evaluated at regular intervals. Surprise Tests/Quizzes/Seminar shall be conducted.

Outline of the course:

<table>
<thead>
<tr>
<th>No.</th>
<th>Unit</th>
<th>Minimum no. of contact hours</th>
<th>Approx. Weight age %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Functions and Limits</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Differentiation</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>Integration</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>Differential equations</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>Complex number</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>Statistics</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>52</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
### Diploma in Mathematics - II

#### Hours
- **4 hrs/week**
- **4 Credits**

#### Sr. No. | Topic | Hours
--- | --- | ---
1 | **Functions and Limits:**
   - Introduction, Function, Types of function, Classification of function,
   - Limit of a function, Properties of limit, Standard limits, limit of trigonometric function. | 6

#### Unit – II

2 | **Differentiation:**
   - Introduction, Differentiation, Geometric meaning, Derivative using first principle, Derivative of standard functions, Working rules, Derivative of Inverse trigonometric functions, Differentiation of composite function, Differentiation of parametric functions, Differentiation of implicit function, Derivative using logarithms, Successive differentiation, Applications of differentiation. | 10

#### Unit – III

3 | **Integration:**
   - Introduction, Integration of standard functions, Integration by substitution, Integration by parts, Integration using partial fraction, Definite integrals, Theorem on definite integrals, Application of Integration. | 10

#### Unit – IV

4 | **Differential Equations:**

#### Unit – V

5 | **Complex Number:**
   - Introduction, Mathematical Operations, Polar form, Modulus, Amplitude Farm, De Movire’s Theorem | 10

#### Unit – VI

6 | **Statistics:**
   - Introduction, Central tendency, Mean, Mean of discrete observations, Mean of grouped data, Step deviation method, Median, Median for grouped data, Mode, Standard deviation, Standard deviation for grouped data. | 6
Tutorial
(020010XXX / 020020XXX / 020030XXX / 020040XXX)
Mathematics - II

Credit: 1 (Tutorial)  Contact hour per week: 1 (Tutorial)

Objective of the course:
· To provide practice for solving the examples of differentiation, integration, differential equation complex numbers and statistics.

Student learning outcomes / objectives:
· To know the various applications of principles of differentiation, integration, differential equation, complex numbers and statistics.

Instructional method and pedagogy:
· Tutorials are to be solved in tutorial room.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Maths – II (Tutorial)</th>
<th>1 hr./week 1 Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>To solve the function and limit based problems.</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>To solve the differentiation based problems.</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>To solve the application of differentiation based problems.</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>To solve the integration based problems.</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>To solve the application of integration based problems.</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>To solve the differential equation based problems.</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>To solve the application of differential equation based problems.</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>To solve the complex numbers based problems.</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>To solve the statistics based problems.</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>To solve the application of statistics based problems.</td>
<td>1</td>
</tr>
</tbody>
</table>
Text book:

Reference books: