# Course Outlines

**Course Details:**

Course Code : MAT 115 Credit hours: 3.0
Course Title : Differential Calculus and Co-ordinate Geometry
Program : CSE/CSIT
Semester : Summer - 2016
Course Teacher : Bristee Saha
Lecturer, Dept. of CSE/CSIT

**Course Assessment:**

The assessment components for evaluation of students are as follows:

| Item/Activity | Marks (%) |
|---|---|
| Work Sheet (including class attendance and class tests) | 25% |
| Assignment/ Presentation | 10% |
| Mid-Term Test | 25% |
| Final Examination | 40% |
| **Total** | **100%** |

**Course Contents:**

| Lectures | Contents (Each lecture will be 1.5 hours duration) |
|---|---|
| Lecture-1 | Limit of a function, Fundamental Theorems on Limit |
| Lecture-2 | Continuity |
| Lecture -3 | Differentiation, Differential coefficient |
| Lecture -4 | Differentiation of a function |
| | **Assignment/Presentation** |
| Lecture -5 | Successive Differentiation |
| Lecture -6 | Successive Differentiation: Leibnitz's Theorem |
| Lecture -7 | Expansion of functions: Rolle's theorem, Mean-Value theorem |
| Lecture -8 | Expansion of functions: Taylor's series, Maclaurin's series |
| | **Class Test** |
| Lecture -9 | Maxima and Minima |
| Lecture -10 | Partial Differentiation |
| Lecture -11 | Partial Differentiation |
| Lecture -12 | Tangent and Normal |
| | **Class Test** |

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| | **Mid-Term** |
| Lecture -13 | Change of axes |
| Lecture -14 | Transformation of co-ordinates, simplification of equations of curves |
| Lecture -15 | General equation of second degree |
| Lecture -16 | Pairs of Straight lines |
| | **Assignment/Presentation** |
| Lecture -17 | Circle |
| Lecture -18 | Parabola, Ellipse, Hyperbola |
| | **Class Test** |
| Lecture -19 | System of co-ordinates, Distance of two points |
| Lecture -20 | Direction-Cosines & Projections |
| Lecture -21 | Equations of planes and lines |
| Lecture -22 | The Sphere |
| Lecture -23 | Cone, Central Conicoids. |
| | **Class Test** |
| Lecture -24 | Overview |
| | **Final Examination** |

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| **Textbooks:** | 1. Differential Calculus<br>B. C. Das<br>B. N. Mukherjee<br><br>2. A Text Book on Co-Ordinate Geometry with Vector Analysis<br>Rahman & Bhattacharjee<br><br>3. Solid Geometry<br>Prof. M. L. Khanna |