**Course-Program Mapping**

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| --- | --- | --- | --- |
| **Date:** | Fall 2019 | **Department:** | Computer Science and Engineering |
| **Course Title:** | Differential and Integral Calculus | **Prepared by:** | Satyaki Das |
| **Course Code:** | MAT 101 | **Checked by:** |  |
| **Course Type:** | MJ, T |  |  |

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| --- | --- | --- | --- | --- | --- |
| **SL No.** | **Course Learning Outcome (ILO)** | **Contribution to** | | | **Assessment Strategy** |
| **Program Learning Outcomes** | **Generic Skills** | **Professional Skills** |
| **1.** | **Describe** the objective of Differential and Integral Calculus. | PLO1(MJ) | GS1.1(MJ), GS3.4(MJ) | PS1(MJ), PS2 (MN) | AS1(MJ), AS7(MJ) |
| **2.** | **Explain** terms related to various techniques of differentiation and integration, design mathematical modeling of different applications. | PLO1(MJ), PLO2 (MJ) | GS2.1(MJ), GS3.4 (MN) | PS1(MJ), PS2 (MJ) | AS1(MJ), AS7(MJ) |
| **3.** | **Understand** a practical problem; **apply** techniques and appropriate formulation to implement method to solve the problem. | PLO1 (MJ), PLO2 (MJ) | GS1.1(MJ), GS4.2(MJ), GS4.3 (MJ), GS3.7(MN) | PS1 (MJ), PS2 (MJ), PS6(MJ) | AS1(MJ), AS2(MJ), AS7(MJ) |

**Note:** Kindly write the appropriate code on the space allotted. Please indicate if the contribution is major (MJ) or minor (MN). The codes are in the following pages.

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**Program Learning Outcome Mapping**

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| --- | --- |
| **Degree** | BSc in Computer Science and Engineering |
| **Program Offering Entity:** | Department of Computer Science and Engineering |

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| **Course Code** | **PLO1** | **PLO2** | **PLO3** | **PLO4** | **PLO5** | **PLO6** | **PLO7** | **PLO8** | **PLO9** | **PLO10** | **PLO11** | **PLO12** |
| **MAT 101** | √√ | √√ |  |  |  |  |  |  |  |  |  |  |
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**Note:** Put (√√) if the course makes a major contribution, put (√) if the course makes a minor contribution.



Program Learning Outcome Alignment

|  |  |
| --- | --- |
| Degree: | BSc in Computer Science and Engineering |
| Program Offering Entity: | Department of Computer Science and Engineering |

**PLO 3:**

**PLO 2:** MAT 101

**PLO 4:**

**PLO 5:**

**PLO 7:**

**PLO 8:**

**PLO 6:**

**PLO 1:** MAT 101

**PLO 11:**

**PLO 10:**

**PLO 12:**

**PLO 9:**

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**Generic Skills Map**

|  |  |
| --- | --- |
| **Degree** | **BSc in Computer Science and Engineering** |
| **Program Offering Entity** | **Department of Computer Science and Engineering** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **Courses** | **GS1** | | **GS2** | | | **GS3** | | | | | | | **GS4** | | | | | |
| **1** | **2** | **1** | **2** | **3** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **1** | **2** | **3** | **4** | **5** | **6** |
| **MAT 101** | √√ |  | √√ |  |  |  |  |  | √√ |  |  | √ |  | √√ | √√ |  |  |  |
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**Note:**  Put (√√) if the course makes a major contribution, put (√) if the course makes a minor contribution.

**Generic Skills Alignment**

|  |  |
| --- | --- |
| **Degree** | **BSc in Computer Science and Engineering** |
| **Program Offering Entity** | **Department of Computer Science and Engineering** |

**Core Competencies for Graduates**

**Newly Admitted Students in Program**

**Internship/Practicum**

**Competent Graduates**

**Quality/ Accreditation/Regulatory Agencies**

**Feedback from Alumni/Employer of Graduates**

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**GS 4:** MAT 101

**GS 3:** MAT 101

**GS 2:** MAT 101

**GS 1:** MAT 101

**Note:** Plot only if the course makes a major contribution.

**Professional Skills Map**

|  |  |
| --- | --- |
| **Degree** | **BSc in Computer Science and Engineering** |
| **Program Offering Entity** | **Department of Computer Science and Engineering** |

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| **Courses** | **PS1** | **PS2** | **PS3** | **PS4** | **PS5** | **PS6** | **PS7** | **PS8** | **PS9** | **PS10** | **PS11** | **PS12** |
| **MAT 101** | √√ | √√ |  |  |  | √√ |  |  |  |  |  |  |
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**Note:** Put (√√) if the course makes a major contribution, put (√) if the course makes a minor contribution.

**Professional Skills Alignment**

|  |  |
| --- | --- |
| **Degree:** | **BSc in Computer Science and Engineering** |
| **Program:** | **Department of Computer Science and Engineering** |

**Core Competencies for Graduates**

**Internship/Practicum**

**Competent Graduates**

|  |  |  |  |
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| **PS1:** MAT 101 |  | **PS7:** |  |
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| **PS2:**MAT 101 |  | **PS8:** |  |
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| **PS3:** |  | **PS9:** |  |
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| **PS4:** |  | **PS10:** |  |
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| **PS5:** |  | **PS11:** |  |
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| **PS6:** MAT 101 |  | **PS12:** |  |

**Quality/ Accreditation/Regulatory Agencies**

**Feedback from Alumni/Employer of Graduates**

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**Newly Admitted Students in Program**

**Note:** Plot only if the course makes a major contribution.



**Learning Assessment Mapping (Course Level)**

|  |  |
| --- | --- |
| **Degree** | **BSc in Computer Science and Engineering** |
| **Program Offering Entity** | **Department of Computer Science and Engineering** |

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| **Courses** | **AS1** | **AS2** | **AS3** | **AS4** | **AS5** | **AS6** | **AS7** |
| **MAT 101** | √√ | √√ |  |  |  |  | √√ |
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**Note:** Put (√√) if the course makes a major contribution, Put (√) if the course makes a minor contribution.

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**Learning Assessment Alignment (Course Level)**

|  |  |
| --- | --- |
| **Degree** | **BSc in Computer Science and Engineering** |
| **Program Offering Entity** | **Department of Computer Science and Engineering** |

**Core Competencies for Graduates**

**Newly Admitted Students in Program**

**Internship/Practicum**

**Competent Graduates**

**AS 2:** MAT 101

**AS 1:** MAT 101

**AS 4:**

**AS 3:**

**AS 6:**

**AS 5:**

**AS 7:** MAT 101

**Quality/ Accreditation/Regulatory Agencies**

**Feedback from Alumni/Employer of Graduates**

**Note:** Plot only if the course makes a major contribution.



Semester Course Report

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| University | ULAB | School | School of Engineering | Department | CSE |
| Semester | Fall | Year | 2019 |

I. Basic Information

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. | Course Code | | | MAT 101 | | | | | |
| 2. | Course Title | | | Differential and Integral Calculus | | | | | |
| 3. | Section | | | 04 | | | | | |
| 4. | Unit/Credit hours: | | | 3 | | | | | |
|  | | | | | | | | | |
| Lectures | | 24 | Tutorial | |  | Practical |  | Total | 24 |
|  | |  |  | |  |  |  |  |  |
| 5. | Course Instructor: | | | Satyaki Das | | | | | |

6. Intended Learning Outcomes:

|  |
| --- |
| 1. **Describe** the objective of Differential and Integral Calculus. |
| 1. **Explain** terms related to various techniques of differentiation and integration, design mathematical modeling of different applications. |
| 1. **Understand** a practical problem; **apply** techniques and appropriate formulation to implement method to solve the problem. |

**II. Statistical Information**

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| |  |  |  | | --- | --- | --- | |  | No. | % | | Students enrolled | 16 | 100.00% | | Students who withdrew | 0 | 0.00% | | Students who took final exam/project | 9 | 56.25% | | Students passed | 8 | 50.00% | | |  |  |  | | --- | --- | --- | |  | No. | % | | Sessions Missed | 2 | 8.3 | | Sessions Made Up |  |  | | Total Sessions Conducted (excluding midterm & finals) | 22 | 91.7 | |
| |  |  | | --- | --- | |  | Average Number Per Session | | Tardy Students | 2 | | Absent Students | 5 | | |  |  | | --- | --- | |  | No. | | Guest Lecturers Invited | 0 | | Field Trips Taken | 0 | |

Achievement of students:

|  |  |  |
| --- | --- | --- |
| Letter Grade | No. | % |
| A+ | 0 | 0.00% |
| A | 0 | 0.00% |
| A- | 2 | 12.50% |
| B | 1 | 6.25% |
| B+ | 0 | 0.00% |
| B- | 1 | 6.25% |
| C+ | 1 | 6.25% |
| C | 0 | 0.00% |
| D | 3 | 18.75% |
| F | 8 | 50.00% |
| I | 0 | 0.00% |
| W | 0 | 0.00% |
| Total | 16 | 100.00% |

III. Professional Information

1. Course topic/content ILO covered

|  |  |  |
| --- | --- | --- |
| Topics Taught | ILO Covered | No. of Sessions |
| Differential Calculus: Functional Analysis and Graphical Information: function, properties of functions, graphs of functions, new function from old, lines and family of functions, Limit: Limits (an informal view), one sided limits, the relation between one sided and two sided limits, computing limits, Continuity: continuity and discontinuity, some properties of continuity, the intermediated value theorem. | 1-3 | 5 |
| Derivatives: slope and rate of change, tangent and normal, derivative of a function, physical meaning of derivative of a function, techniques of differentiation, chain rule, successive derivatives. | 3 | 3 |
| Derivative in graphing and applications: analysis of functions, maximum and minimum, Expansion of functions: Taylor's series, Maclaurian's series, Leibniz; Rolle's and Mean Value theorems, Partials and total derivatives of a function of two or three variables. | 1-3 | 3 |
| Different technique of integration: integration, fundamental integrals, methods of substitutions, integration of rational functions, integration by parts, integrals of special trigonometric functions, reduction formulae for trigonometric functions. | 3 | 5 |
| Definite integrals: general properties of definite integral, definite integral as the limit of sum and as an area, definition of Riemann integral, Fundamental theorem of integral calculus and its applications to definite integrals, determination of arc length, Improper integrals, Double integrals, Evaluation of Areas and Volumes. Introduction to MATLAB and LAB Sessions. | 3 | 6 |

What percentage of topics/content planned were actually taught? (Please encircle appropriate answer)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. >90% |  | b. 70-90% |  | c. <70% |  |

If <70%, please write the reason for not teaching all topics/content planned:

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| --- |
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If any topics/contents were taught which were not written in course outline, give reasons in detail:

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|  |

1. Teaching and learning methods:

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| --- | --- | --- |
| **Teaching Methods** | **No.** | **% of Total Session** |
| Lectures | 22 | 100 |
| Debate |  |  |
| Discussion | 10 | 45.45 |
| Presentation |  |  |
| Group Work | 4 | 18.18 |
| Others |  |  |
| Active learning: (Please Specify) |  |  |
| **Teaching Aids:** | **No.** | **% of Total Session** |
| Video |  |  |
| Audio |  |  |
| Handout |  |  |

1. Student assessment:

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| --- | --- | --- | --- |
| **SL#** | **Type** | **Description** | **ILO Assessed** |
| 1. | Written Examination | Midterm, Final and Quizzes | 1-3 |
| 2. | Oral Examination |  |  |
| 3. | Laboratory work |  |  |
| 4. | Projects |  |  |
| 5. | Research Papers |  |  |
| 6. | Others (please specify) |  |  |

Involvement of external evaluator in student assessment

|  |  |  |  |
| --- | --- | --- | --- |
|  | Yes |  | No |

If yes, please explain

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|  |

1. Facilities and teaching materials:

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| **SL#** | **Facilities** | **Please rate the following**  **(1-inadequate, 2-adequate to some extent, 3-adequate)** | | |
| **1** | **2** | **3** |
| 1. | Classroom |  |  |  |
| 2. | Projector/Screen |  |  |  |
| 3. | Whiteboard/Marker |  |  |  |
| 4. | Chair/table |  |  |  |
| 5. | Computer (If appropriate) |  |  |  |
| 6. | Laboratory (If appropriate please specify) |  |  |  |
| 7. | Equipment (If appropriate please specify) |  |  |  |

1. List any Inadequacies:

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1. Administrative Constraints

List any difficulties encountered:

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1. Suggestions for Course Enhancement:

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| Class size should be reduced. |

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| Signature: |  |  |
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| Date: |  |  |