

**Semester Course Report**

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| University | ULAB | School | Science and Engineering | Department | CSE |
| Semester | Fall | Year | 2019 |

I. Basic Information

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. | Course Code | | | MAT 101 | | | | | |
| 2. | Course Title | | | Differential and Integral Calculus | | | | | |
| 3. | Section | | | 04 | | | | | |
| 4. | Unit/Credit hours: | | | 03 | | | | | |
|  | | | | | | | | | |
| Lectures | | 24 | Tutorial | |  | Practical |  | Total | 24 |
|  | |  |  | |  |  |  |  |  |
| 5. | Course Instructor: | | | Satyaki Das | | | | | |

6. Intended Learning Outcomes:

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| 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. |

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| --- | --- |
| Knowledge | K1 To **provide** a thorough understanding the meaning of differentiation and Integration with real-life applications and the resource requirements. |
| K2 To **introduce** the various methods of calculating derivative of a function. |
| Attitude | A1 To **enable** students to apply the techniques of indefinite and definite integration to calculate areas, volumes, and lengths. |
| Skills | S1 To **emphasize** on efficient for solving practical problems through various formulae to be used in the implementations of technical problems. |
| S2 To **expose** the students to a variety of techniques that have practical applications, while conducting detailed analysis of the requirements. |

**II. Statistical Information**

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| --- | --- | --- |
|  | **No.** | **%** |
| Sessions Missed | 2 | 8.3 |
| Sessions Made Up |  |  |
| Total Sessions Conducted (excluding midterm& finals) | 22 | 91.7 |

|  |  |  |
| --- | --- | --- |
|  | **No.** | **%** |
| Students enrolled | 16 |  |
| Students who withdrew | 0 |  |
| Students who took final exam/project | 9 |  |
| Students passed | 8 |  |

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| --- | --- |
|  | **No.** |
| Guest Lecturers Invited |  |
| Field Trips Taken |  |

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| --- | --- |
|  | **Average Number Per Session** |
| Tardy Students | **2** |
| Absent Students | **5** |

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: slop 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 tick the 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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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 | Quiz, Midterm, Final | K1, K2, A1, S1, S2 |
| 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 |  |  | 3 |
| 2. | Projector/Screen |  | 2 |  |
| 3. | Whiteboard/Marker |  | 2 |  |
| 4. | Chair/table |  |  | 3 |
| 5. | Computer (If appropriate) |  | 2 |  |
| 6. | Laboratory (If appropriate please specify) |  |  |  |
| 7. | Equipment (If appropriate please specify) |  |  |  |

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