**Curriculum Plan (ODD SEM 2021): B. Sc. (H) Mathematics II Year. (MULTIVARIATE CALCULUS)**

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| **Teacher Profile**  **Dr. Abhishek Kr. Singh**  Department of Mathematics  Kalindi College, University of Delhi, Delhi- 110008  Mobile: +91-9015737554  **E- mail**: abhishek@kalindi.du.ac.in | | **C:\Users\Abhishek\Pictures\2014-05-28 002\scan 053.jpg**  **PHOTO** | | **Marks Distribution** | **Theory** | 75 Marks | | |
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| **Internal Assessment** | Assignments- 10 Marks | | |
| Test- 10 Marks | | |
| Attendance- 5 Marks | | |
|  | **Practical** | 50 Marks | | |
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| Total Marks | 150 | | |
| **Lectures 4 per week.**  **Practical 4 per week.** |  | | |
| **Reference** |  | **M.J.STRAUSS, G.L. BRADLEY AND K.J. SMITH, CALCULUS (3RD EDITION),**  **PEARSON EDUCATION, DELHI-07** | | | | | | |
|  | **Week** | **Topics(THEORY)** | | | | | | **PRACTICAL.** |
|  | **1st week**  *16-21 AUG* | *FUNCTIONS OF SEVEREL VARIABLES.*  *LIMIT AND CONTINUITY OF FUNCTIONS OF TWO VARIABLES.* | | | | | | *1.TO DRAW THE SURFACES AND TO FIND LEVEL CURVES.* |
| **2nd week**  23-28 AUG | PARTIAL DIFFERENTIATION.  TOTAL DIFFERENTIABILITY AND DIFFERENTIABILITY.  SUFFICIENT CONDITION FOR DIFFERENTIABILITY. | | | | | |
|  | **3rd week**  31 AUG-4 SEP | CHAIN RULE FOR ONE AND TWO INDEPENDENT PARAMETERS.  DIRECTIONAL DERIVATIVES.THE GRADIENT.  MAXIMAL AND NORMAL PROPERTY OF THE GRADIENT. TANGENT PLANES. | | | | | | 2. TO DRAW SURFACES AND TO FIND LIMIT. |
| **4th week**  6-11 SEP | EXTREMA OF FUNCTIONS OF TWO VARIABLES OF TWO VARIABLES.  METHOD OF LAGRANGE MULTIPLIERS.  CONSTRAINED OPTIMIZATION PROBLEMS.  DEFINITION OF VECTOR FIELD. DIVERGENCE AND CURL. | | | | | | 3.TO DRAW TANGENT PLANE OF THE SURFACES AT GIVEN POINT. |
| **5th week**  13-18 SEP | DOUBLE INTEGRATION OVER RECTANGULAR REGION.  DOUBLE INTEGRATION OVER NON-RECTANGULAR REGION. | | | | | | 5. TO FIND CRITICAL POINTSAND IDENTIFY RELATIVE MAXIMA AND MINIMA OR SADDLE POINTS. |
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|  | **6th week**  20-25 SEP | | DOUBLE INTEGRAL IN POLAR COORDINATES. TRIPLE INTEGRALS. TRIPLE INTEGRAL OVER A PARALLELEPIPED AND SOLID REGIONS. | | | | | 6. TO DRAW REGIONS D. |
|  | **7th week**  27 SEP-1 OCT | | VOLUME BY TRIPLE INTEGRALS.  CYLINDRICAL AND SPHERICAL COORDINATES. | | | | | 7. CONDITION TO SATISFYING THE INEQUALITY. |
|  | **8th week**  4-9 OCT | | CHANGE OF VARIABLES IN DOUBLE INTEGRALS AND TRIPLE INTEGRALS. | | | | | 8. LIMIT OF THE FUNCTIONS WHEN TENDS TO 0. |
|  | **9th week**  11-16 0CT | | LINE INTEGRALS.  APPLICATIONS OF LINE INTEGRALS.  MASS AND WORK. | | | | | 9. LIMIT OF THE FUNCTION TENDS TO INFINITY. |
|  | **10th week**.  18-23 OCT | | FUNDAMENTAL THEOREM FOR LINE INTEGRALS.  CONSERVATIVE VECTOR FIELDS. | | | | | 10.VERIFICATION OF MAXIMUM-MINIMUM THEOREM |
|  | **11th week**  25-30 OCT | | INDEPENDENCE OF PATH.  GREEN’S THEOREM.  SURFACE INTEGRALS. | | | | | 11. VERIFICATION OF FIRST DERIVATIVE TEST . |
|  | **12th week**  1-6 NOV | | INTEGRALS OVER PARAMETRICALLY DEFINED SURFACES. | | | | | 12. TAYLOR’S SERIES. |
|  | **13th week**  8-13 NOV | | STOKES’S THEOREM. | | | | |  |
|  | **14th week**  15-20 NOV | | DIVERGENCE THEOREM. | | | | |  |
| 22 NOV- 7 DEC (15TH and 16TH Week)- REVISION. | | | | | | |  | |
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