**Curriculum Plan (2024-25 EVEN SEM): B. Sc. (H) Mathematics II Year. (MULTIVARIATE CALCULUS)**

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| **Teacher Profile****Dr. Abhishek Kr. Singh**Department of MathematicsKalindi College, University of Delhi, Delhi- 110008Mobile: +91-9015737554**e- mail**: abhishek@kalindi.du.ac.in | **C:\Users\Abhishek\Pictures\2014-05-28 002\scan 053.jpg****PHOTO** | **Marks Distribution**  | **Theory**  |  90 Marks  |
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| **Internal Assessment** | 30 Marks |
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| Total Marks  |  |
| **Lectures 3 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** | *FUNCTIONS OF SEVEREL VARIABLES.* *LIMIT AND CONTINUITY OF FUNCTIONS OF TWO VARIABLES.*  |  |
| **2nd week** | PARTIAL DIFFERENTIATION. TOTAL DIFFERENTIABILITY AND DIFFERENTIABILITY. SUFFICIENT CONDITION FOR DIFFERENTIABILITY. |
|   | **3rd week** | CHAIN RULE FOR ONE AND TWO INDEPENDENT PARAMETERS. DIRECTIONAL DERIVATIVES.THE GRADIENT. MAXIMAL AND NORMAL PROPERTY OF THE GRADIENT. TANGENT PLANES. |  |
| **4th week** | EXTREMA OF FUNCTIONS OF TWO VARIABLES OF TWO VARIABLES. METHOD OF LAGRANGE MULTIPLIERS. CONSTRAINED OPTIMIZATION PROBLEMS. DEFINITION OF VECTOR FIELD. DIVERGENCE AND CURL. |  |
| **5th week** | DOUBLE INTEGRATION OVER RECTANGULAR REGION. DOUBLE INTEGRATION OVER NON-RECTANGULAR REGION. |  |
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|  | **6th week** | DOUBLE INTEGRAL IN POLAR COORDINATES. TRIPLE INTEGRALS. TRIPLE INTEGRAL OVER A PARALLELEPIPED AND SOLID REGIONS. |  |
|  | **7th week** | VOLUME BY TRIPLE INTEGRALS.CYLINDRICAL AND SPHERICAL COORDINATES. |  |
|  | **8th week** | CHANGE OF VARIABLES IN DOUBLE INTEGRALS AND TRIPLE INTEGRALS. |  |
|  | **9th week** | LINE INTEGRALS. APPLICATIONS OF LINE INTEGRALS. MASS AND WORK. |  |
|  | **10th week**. | FUNDAMENTAL THEOREM FOR LINE INTEGRALS. CONSERVATIVE VECTOR FIELDS. |  |
|  | **11th week** | INDEPENDENCE OF PATH. GREEN’S THEOREM. SURFACE INTEGRALS.  |  |
|  | **12th week** | INTEGRALS OVER PARAMETRICALLY DEFINED SURFACES. |  |
|  | **13th week** | STOKES’S THEOREM. |  |
|  | **14th week/ 15TH week** | DIVERGENCE THEOREM. |  |
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