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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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** | 90 Marks | | |
|  |  | | |
| **Internal Assessment** | 30 Marks | | |
|  | | |
|  | | |
|  |  |  | | |
|  |  | | |
| 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. | | | | | |  |
|  | | | | | | | | |
|  | **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. | | | | |  |
|  | | | | | | |  | |
|  | | | | | | | | |