**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 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**  |  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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