



## Approved scheme of studies and courses for Graduate Programs

### MS/M. Phil (Mathematics)

#### Admission Criterion:

- Sixteen years of schooling (BS/ M.Sc) or 4 years education (minimum 130 credit hours) after HSSC/F.A. /F.Sc/Grade 12 equivalent in mathematics with at least 2.50 CGPA from a recognized University as per HEC rules.  
OR  
MA/M.Sc in Mathematics with at least second division or equivalent grade in case the candidate is from annual system.
- GAT-General conducted by the National Testing Service with a minimum cumulative score of 50% or GRE (International) Subject Test with 50 % percentile score or GAT subject test with 60 % marks will be required at the time of admission. OR the candidates who do not possess the required score in the above mentioned tests must pass KIU entry test with a minimum of 50% marks.

#### Scheme of Studies

| Semester –I   |                                  |             |          |
|---------------|----------------------------------|-------------|----------|
| S. No         | Course Name                      | Course Code | Cr. Hrs. |
| 1             | Support Course-I                 |             | 3        |
| 2             | Core Course-I(Major Course)      |             | 3        |
| 3             | Core Course-II (Major Course)    |             | 3        |
| 4             | Core Course-III (Major Course)   |             | 3        |
| Total Cr. H   |                                  |             | 12       |
| Semester –II  |                                  |             |          |
| S. No         | Course Name                      | Course Code | Cr. Hrs. |
| 1             | Support Course-II                |             | 3        |
| 2             | Elective-I (Major Specialized)   |             | 3        |
| 3             | Elective-II (Major Specialized)  |             | 3        |
| 4             | Elective-III (Major Specialized) |             | 3        |
| Total Cr. Hrs |                                  |             | 12       |

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| <b>Semester -III onwards</b>                   |             |             |                 |
|--|-------------|-------------|-----------------|
| <b>S. No</b>                                   | <b>Name</b> | <b>Code</b> | <b>Cr. Hrs.</b> |
| 1  | MS Thesis   | MATH-750    | 6               |
| <b>Grand Total Credit Hours of the Program</b> |             |             | <b>30</b>       |


## Approved Graduate Courses (MS)

| S #                    | Course Code | Course Title                            | Credit Hours |
|------------------------|-------------|---|--------------|
| <b>Support courses</b> |             |   |              |
| 1                      | STAT-625    | Statistical Applications                | 3            |
| 2                      | MATH-602    | Research Methodology                    | 3            |
| 3                      | MATH-604    | Computational skills for Research       | 3            |
| <b>Major Core</b>      |             |   |              |
| 1                      | MATH-701    | Advance Differential Equations          | 3            |
| 2                      | MATH-702    | Rings and Modules                       | 3            |
| 3                      | MATH-703    | Topological Groups                      | 3            |
| 4                      | MATH-704    | Hilbert Space Methods                   | 3            |
| 5                      | MATH-705    | Optimization Theory                     | 3            |
| 6                      | MATH-706    | Perturbation Methods I                  | 3            |
| 7                      | MATH-731    | Advance Group theory                    | 3            |
| 8                      | MATH-708    | Numerical Solution of ODEs              | 3            |
| 9                      | MATH-709    | Advanced Numerical Analysis             | 3            |
| 10                     | MATH-710    | Numerical Linear Algebra                | 3            |
| 11                     | MATH-711    | Approximation Theory and Applications   | 3            |
| 12                     | MATH-712    | Advanced Partial Differential Equations | 3            |
| 13                     | MATH-713    | Unconstrained Optimization Theory       | 3            |
| 14                     | MATH-714    | Numerical Solutions of PDEs-I           | 3            |
| 15                     | MATH-715    | Commutative Algebra -I                  | 3            |
| 16                     | MATH-716    | Commutative Algebra -II                 | 3            |
| 17                     | MATH-717    | Advanced Topology-I                     | 3            |
| 18                     | MATH-718    | Algebraic Topology                      | 3            |
| 19                     | MATH-742    | Graph Theory                            | 3            |
| 20                     | MATH-740    | Advance Functional Analysis             | 3            |
| 21                     | MATH-719    | Mathematical Analysis                   | 3            |

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|                          |          |   |   |
|--------------------------|----------|---|---|
| 22                       | MATH-720 | General Relativity                                | 3 |
| 23                       | MATH-721 | Probability Models and Application                | 3 |
| 24                       | MATH-722 | Numerical Optimization                            | 3 |
| <b>Major Specialized</b> |          |   |   |
| 1                        | MATH-723 | Complexity Theory                                 | 3 |
| 2                        | MATH-724 | Finite Fields                                     | 3 |
| 3                        | MATH-725 | Fuzzy Logic and Applications                      | 3 |
| 4                        | MATH-726 | Fuzzy Probability and Statistics                  | 3 |
| 5                        | MATH-727 | Topology  | 3 |
| 6                        | MATH-728 | Geometric Function Theory                         | 3 |
| 7                        | MATH-729 | Advanced Convex Analysis                          | 3 |
| 8                        | MATH-730 | Advanced Modern Algebra with Applications         | 3 |
| 9                        | MATH-707 | Fixed Point Theory                                | 3 |
| 10                       | MATH-732 | Symmetry Methods in Differential Equations        | 3 |
| 11                       | MATH-733 | Rough Set Theory and its Applications             | 3 |
| 12                       | MATH-734 | Numerical Solutions of PDEs II                    | 3 |
| 13                       | MATH-735 | Fuzzy sets and their applications                 | 3 |
| 14                       | MATH-736 | Modeling and Simulations of Cellular structures   | 3 |
| 15                       | MATH-737 | Digital Image processing and 3D reconstruction-I  | 3 |
| 16                       | MATH-738 | Digital Image processing and 3D reconstruction-II | 3 |
| 17                       | MATH-739 | Topics in Applied Commutative Algebra             | 3 |
| 18                       | MATH-741 | Computational Geometry                            | 3 |
| 19                       | MATH-743 | Advanced Fluid Dynamics                           | 3 |

  
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