DEPARTMENT OF MATHEMATICS
CENTRAL UNIVERSITY OF KERALA
PERIYE CAMPUS, KASARAGOD

Minutes of the first Board of studies meeting held on Thursday, 28th August 2014 in the department of Mathematics in Room No.26 at 2.30 p.m.

The following members were present;

1. Prof. S. Kumaresan, Dept. of Mathematics, Hyderabad Central University, Hyderabad
2. Prof. Parameswaran Sankaran, Institute of Mathematical Sciences, CIT Campus, Taramani, Chennai- 600113
3. Dr Germina K.A., Head, Dept. of Mathematics, CUK, Kasaragod.
4. Dr Shaini Pulickakunnel, Assistant Professor, Department of Mathematics, CUK, Kasaragod.
5. Dr Tasleema T.M., Assistant Professor, Dept. of Computer Science, CUK, Kasaragod

The meeting started at 2.30 p.m. The Convenor Dr Germina welcomed the members and submitted the modified Course Structure and Syllabus approved by the Faculty Council, Department of Mathematics, CUK. She then briefed how and what modifications were done in the communicated Course Structure and Syllabus. Further, she reported the comments received from Prof. A. M. Mathai.

With the permission of the experts in the Board of Studies, the convenor invited Dr. Ali Akbar, Dr. S. Gnanavel, Dr. Arjun K. Rathie and Sri. Harilal N to join the B. S meeting. The committee commented on each and every paper and also on the course structure. The whole structure and Syllabus was thoroughly discussed. The revised version of the same was prepared and submitted for the approval. The members of the Board of Studies approved the revised course structure and syllabus. (A copy of the approved Course Structure and Syllabus is attached herewith). The committee decided to implement the revised course structure and syllabus from the academic year 2014-2015 onwards.

The members also commented on the Method of evaluation of M. Sc Mathematics Programme and requested to include the same in the minutes.

The experts strongly recommended that the mode of evaluation of examinations should be strictly internal.

Regarding the evaluation of the Dissertation there should be a 3-member committee consisting of HOD/ a nominee of HOD, the supervisor and one permanent faculty from the Department.

Dissertation should be initiated in third Semester as a reading course. The student has to submit his/her area of interest on or before 15 days from the commencement of the third semester to the HOD. Students with the help of the respective supervisor, select the topic of dissertation. Each student has to present two Seminars: one mid-semester seminar, another end-semester seminar. Also each student has to submit a report at the end of the third semester to the respective supervisor for evaluation.

The meeting was fruitful and Dr Shaini P. thanked the experts for their valuable suggestions and guidance.

The meeting came to a close at 6.00 p.m.

1. Prof. S. Kumaresan, Member, Expert in the Discipline
2. Prof. Parameswaran Sandaran, Member, Expert in the Discipline
3. Dr Shaini Pulickakunnel, Member, Asst. Professor from Dept. of Mathematics 28/8/2014
4. Dr Tasleema T.M., Member, Asst. Professor from Dept. of Computer Science 28/08/2014
5. Dr Germina K.A, Chairperson, Head, Department of Mathematics 28/8/2014

References

1. Richard H. Crowell and Ralph H. Fox, Introduction to Knot Theory, Dover, 2008.
2. W.B. Raymond Lickorish, Introduction to Knot Theory, Springer, 1997.
3. M.A. Armstrong, Basic Topology, Springer New York, 2010.
4. William S. Massey, A Basic Course in Algebraic Topology, Springer Science & Business Media, 1991.

Mathematical Methods

Code:**MSM5023**

Lectures : 2
Tutorials : 2
Practical : 0
Credits : 3

INTEGRAL TRANSFORMS: Laplace transforms: Definitions - properties - Laplace transforms of some elementary functions - Convolution Theorem - Inverse Laplace transformation - Applications. Fourier transforms - Definitions - Properties - Fourier transforms of some elementary functions - Convolution theorems - Fourier transform as a limit of Fourier Series - Applications to PDE.

INTEGRAL EQUATIONS: Volterra Integral Equations: Basic concepts - Relationship between Linear differential equations and Volterra integral equations - Resolvent Kernel of Volterra Integral equation - Solution of Integral equations by Resolvent Kernel - The Method of successive approximations - Convolution type equations, solution of integral differential equations with the aid of Laplace transformation. Fredholm Integral equations: Fredholm equations of the second kind, Fundamentals - Iterated Kernels, Constructing the resolvent Kernel with the aid of iterated Kernels - Integral equations with degenerate Kernels - Characteristic numbers and eigen functions, solution of homogeneous integral equations with degenerate Kernel - non homogeneous symmetric equations - Fredholm alternative.

CALCULUS OF VARIATIONS: Extrema of Functionals: The variation of a functional and its properties - Euler's equation - Field of extremals - sufficient conditions for the Extremum of a Functional conditional Extremum Moving boundary problems - Dis continuous problems - one sided variations - Ritz method.

References

1. I.N. Sneddon, The Use of Integral Transforms, Tata McGraw Hill, 1972.
2. I.M. Gelfand and S.V. Fomin, Calculus of Variations, Dover, 2000.
3. M. L. Krasnov, G. K. Makarenko and A. I. Kiselev , Problems and Exercises in Calculus of Variations, Imported Publishers, 1985.
4. Ram P Kanwal, Linear Integral Equations, Academic Press, 1971.
5. A. M. Wazwaz; A First Course in Integral Equations; World Scientific, 1997.
6. F. B. Hildebrand, Methods of Applied Mathematics, Prentice Hall, 1965.

Nonlinear Analysis

Code:**MSM5024**

Lectures : 2
Tutorials : 2
Practical : 0
Credits : 3

Fixed Point Theorems with Applications: Banach contraction mapping theorem, Brouwer fixed point theorem, Leray-Schauder fixed point theorem. Calculus in Banach spaces: Gateaux as well as Frechet derivatives, chain rule, Taylor's expansions, Implicit function theorem with applications, subdifferential. Monotone Operators: maximal monotone operators with properties, surjectivity theorem with applications. Degree theory and condensing operators with applications.