

DEPARTMENT OF MATHEMATICS
CENTRAL UNIVERSITY OF KERALA
PERIYE, KASARAGOD

Minutes of the Second Board of studies meeting held on Thursday, 7th February, 2019 in the Department of Mathematics in Room No. 28 at 2.30 p.m.

The following members were present:

1. Prof. Gadadhar Misra,
Department of Mathematics,
Indian Institute of Science, Bangalore – 560 012.
2. Prof. A.K. Nandakumaran,
Department of Mathematics,
Indian Institute of Science, Bangalore – 560 012.
3. Prof. A. R. Rajan, Emeritus Professor,
Department of Mathematics, University of Kerala,
Thiruvananthapuram, Kerala – 695 581.
4. Mr. V. Kumar, Assistant Professor,
Department of Computer Science, CU Kerala.
5. Dr. V. Vilfred, Associate Professor & Head,
Department of Mathematics, CU Kerala.
6. Dr. K. A. Germina, Associate Professor,
Department of Mathematics, CU Kerala.
7. Dr. Ali Akbar K, Assistant Professor,
Department of Mathematics, CU Kerala.

The Meeting started at 2.30 p.m. The Chairperson Dr. V. Vilfred welcomed the members and submitted the modified Course Structure and Syllabus approved by the Faculty Council, Department of Mathematics, CU Kerala. Then, he briefed how and what modifications were done in the communicated Course Structure and Syllabus.


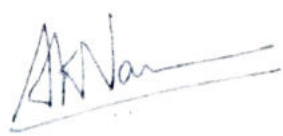

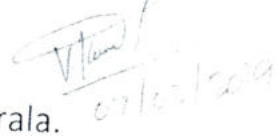
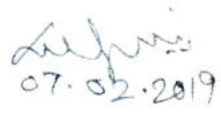
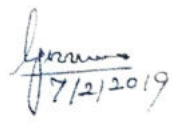

With the permission of the experts in the Board of Studies, the convenor invited Dr. Shaini P, Dr. S. Gnanavel and Dr. Manikandan Rangaswamy to join the BoS Meeting. The committee commended on each and every paper and also on the course structure. The whole structure and Syllabus was thoroughly discussed. 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 2019 - 20 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.

The members of the BoS seriously noted the current strength of intake at CU Kerala to M.Sc. Maths programme that is increased to forty seats and strongly recommend that for quality teaching the number of teaching faculty in the Department of Mathematics should be increased sufficiently since present strength of seven faculty is quiet insufficient.

The meeting was fruitful and Dr. K.A. Germina thanked the experts for their valuable suggestions and guidance.

The meeting came to a close at 5.00 p.m.

1. Prof. Gadadhar Misra,
Department of Mathematics,
I.I.Sc., Bangalore – 560 012. 
2. Prof. A.K. Nandakumaran,
Department of Mathematics,
I.I.Sc., Bangalore – 560 012. 
3. Prof. A. R. Rajan, Emeritus Professor,
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Department of Mathematics, CU Kerala. 

Syllabus:

Poincare's Recurrence Theorem, Hopf's Maximal Ergodic Theorem, Birkoff's Individual ergodic Theorem, von Neumann's Mean Ergodic Theorem. Ergodicity, Mixing, Eigenvalues. Discrete Spectrum Theorem. Ergodic automorphisms of Compact Groups. Conjugacy. Entropy.

Text books:

1. Peter Walters, An Introduction to Ergodic Theory, Springer, 2005.

References:

1. Halmos P. R., Intordoctory Lectures in Ergodic Theory,
2. Nadakarni M. G., Ergodic Theory, Hindustan Book Agency, 3rd Edition, 2013.

Code:MAT5008: Fixed Point Theory Prerequisites: Topology and functional analysis	L	T	P	Credit
	3	2	0	4

Course Category	Elective
Course Type	Theory
Course Objective	The objective of the course is to motivate and equip the students with the basics in topological as well as metric fixed point theory. It also intends to expose the students to some of the interesting applications in fixed point theory and make them understand how this important tool is used in the study of nonlinear phenomena.
Course Outcome(s)	Upon completion of this course : Students will be familiar with some of the classical results in Metric fixed point theory such as Banach Contraction Principal and several other contraction theorems such as Kannan's fixed point theorem, Chatterjea's fixed point theorem etc.; able to understand the concept of measure of noncompactness; able to understand Brower fixed point theorem and its generalizations such as Schauder fixed point theorem and its applications

	students will be able to recognize various iteration schemes for approximating fixed points
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Syllabus:

The Background of Metrical Fixed Point Theory, Fixed Point Formulation of Typical Functional Equations, Fixed Point Iteration Procedures, The Principle of Contraction mapping in complete metric spaces, Some generalizations of Contraction mapping, A converse of Contraction Principle, some applications of Contraction Principle.

Convexity, Smoothness, and Duality Mappings, Geometric Coefficients of Banach Spaces, Existence Theorems in Metric Spaces, Existence Theorems in Banach Spaces, Approximation of Fixed Points, Strong Convergence Theorems.

Compactness in metric spaces. Measure of noncompactness, Measure of noncompactness in Banach spaces, Classes of special operators on Banach spaces. The Fixed point property, Brower's Fixed point theorem, equivalent formulations, some examples and applications, The computation of fixed points, Schauder's fixed point theorem and its generalizations,

Applications of Fixed Point Theorems.

Text books:

1. V. Berinde, Iterative approximation of fixed points, Springer-Verlag, Berlin, Heidelberg, 2007.
2. R. P. Agarwal, Maria Meehan and D.O' Regan, Fixed point theory and applications, Cambridge University Press, 2001.

References:

1. V. I. Istratescu, Fixed Point Theory - An Introduction, D. Reidel Publishing Company, Dordrecht, Holland, 1981.
2. K. Goebel and W. A. Kirk, Topics in Metric Fixed point theory, Cambridge University Press, 1990.
3. A. Granas and J. Dugundji, Fixed point theory, Springer Monographs in Mathematics, 2003.
4. M. A. Khamsi and W. A. Kirk, An Introduction to Metric Spaces and Fixed Point Theory, A Wiley- Interscience Publication, 2001.
5. W. A .Kirk and B. Sims, Handbook of Metric Fixed Point Theory, Kluwer Academic Publishers, 2001.
6. Sankatha Singh, Bruce Watson and Pramila Srivastava, Fixed point theory and best approximation:
The KKM-Map principle, Kluwer Academic Publishers, 1997.
7. E.Zeidler, Nonlinear Functional Analysis and its Applications I: Fixed Point Theorems, Springer-Verlag, New York, 1986.