



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

BOS minutes of the Department of Post Graduate Studies and Research in Mathematics year - 2021

Date: 12-11-2020

Venue: Department of PG Studies and Research in Mathematics, LCRI Block, St Aloysius College (Autonomous), Mangaluru. (virtual mode)

Members Present:

Ms Anupriya Shetty, Chairperson

Prof B R Shankar, Department of Mathematical and Computational Sciences, NITK, Surathkal, Mangaluru - Subject Expert

Dr Sam Johnson, Associate Professor, Department of Mathematical and Computational Sciences, NITK, Surathkal, Mangaluru – Vice Chancellor's Nominee

Dr Shiju George, Assistant Professor, Department of Mathematics, Brennen College, Thalacherry

Mr Karthik Suresh, High Performance Computing Engineer, ExxonMobil, Bengaluru, Karnataka. – Industry Expert

Dr Shubhalakshmi, internal member

Ms Apoorva Shetty - internal member

Ms Laisha Laveena D'Souza - internal member

Ms Shreelakshmi, student representative



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

Agenda:

1. Proposal for replacing C++ programming with Scilab for computational lab of Numerical Analysis in Second semester
2. Proposal for introducing computational lab using FOSS of 2 credits each in Second and Fourth semesters
3. Review of question papers of Fourth semester of the academic year 2019-20.
4. Review of results of Fourth semester of the academic year 2019-20.

In accordance with the suggestions received from the BOS members during the meeting held on 20 December 2019, the following changes have been proposed:

Agenda 1:

The C++ programming software used in the Computational Lab of Numerical Analysis has been replaced by Scilab. The syllabus for the course remains same.

PH 563.3 Numerical Analysis with Computational Lab

Unit I: Transcendental and Polynomial Equations:

Introduction: Direct Methods, Iterative Methods, Initial approximations, Bisection Method Iteration Methods Based on First Degree Equation: Secant and Regula Falsi method, Newton Raphson method

Iteration Methods Based on Second Degree Equation: Muller Method, Chebyshev method



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

General Iteration Methods: First Order method, Second Order Method, Higher Order Methods, Acceleration of the convergence, Efficiency of a method, Methods for Multiple roots

Polynomial Equations: Synthetic Division, Birge-Vieta Method, Bairstow Method

System of Linear Algebraic Equations and Eigenvalue Problems: Introduction, Direct methods: Gauss Elimination Method, Gauss-Jordan Method, Triangularisation Method, Cholesky Method

Iteration Methods: Jacobi Iteration Method, Gauss Seidel Iteration Method

Eigenvalues and Eigenvectors, Bounds on Eigenvalues Power method, Inverse Power method (12 hours)

Unit II: Interpolation and Approximation

Introduction, Interpolation: Lagrange and Newton Interpolations, Iterated linear Interpolation, Newton's Divided difference Interpolation, Truncation Error Bounds,

Interpolating Polynomials using Finite Differences: Gregory-Newton Forward Difference interpolation, Gregory-Newton Backward Difference Interpolation,

Hermite Interpolation
Least Square Approximation

(12 Hours)



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

Unit III: Differentiation and Integration

Numerical Differentiation: Methods based on Interpolation, Methods Based on Finite Differences, Methods Based on Undetermined Co-efficient

Numerical Integration: Methods Based on Interpolation, Methods Based on Undetermined Co-efficient, Gauss Quadrature methods

Integration Methods of Gaussian Type with Pre-assigned Abscissas: Lobatto

Integration methods, Radau Integration Methods

Composite Integration Methods: Trapezoidal Rule, Simpson's Rule Double Integration: Trapezoidal Method, Simpson's Method. (12 Hours)

Unit IV: Ordinary Differential Equations

Initial Value Problems

Introduction, Numerical Methods: Euler Method, Backward Euler Method, Mid-Point Method, Single Step Methods: Taylor Series Method, Runge Kutta Second order Method, Runge - Kutta Fourth order method, Multistep Methods: Explicit Multistep Methods (Adams-Bashforth Methods, Nystrom Methods), Implicit Multistep Methods (Adams-Moulton Method, Milne - Simpson Method)

Boundary Value Problems

Introduction, Difference methods, Boundary value problems for $y'' = (x, y)$, Trapezoidal, Dahlquist and Numerov methods

(12 hours)



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

References:

- 1.) M.K.Jain, S.R.K.Iyengar, R.K.Jain: Numerical Methods for Scientific and Engineering Computation, New Age International, 6th edition, 2012
- 2.) C.F.Gerald and P.O.Wheatly-Applied Numerical Analysis,Pearson Education Inc., 1999
- 3.) M.K.Jain- Numerical Solution of Differential Equations, New Age International (P) Ltd, New Delhi, 2nd edition,1984

Computational Lab (Scilab)

1. Regula - Falsi method.
2. Secant method.
3. Newton - Raphson method.
4. Chebyshev method.
5. Birge - Vieta method .
6. Bairstow method.
7. Gauss - Jacobi method.



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

8. Gauss - Seidal method.
9. Trapezoidal method.
10. Simpson $\frac{1}{3}$ rd method.
11. Program to solve the initial value problem using Euler method.
12. Program to solve the initial value problem using modified Euler method
13. Program to solve the initial value problem using Runge Kutta 2nd order method.
14. Program to solve the initial value problem using Adam - Bashforth method.
15. Program to solve the initial value problem using Milne - Simpson method.

Agenda 2:

To expose the students to basic programming skills and to support traditional teaching methods with modern tools for problem-solving **Computational Lab – 1** and **Computational Lab – 2** (using FOSS and Problem working) of **2 credits** each has been added in the **second** and **fourth** semesters respectively

Second Semester

PS 567.2P Computational Lab -1 (using FOSS and Problem working)

Introduction to FOSS

ST ALOYSIUS COLLEGE (AUTONOMOUS)

MANGALURU - 575 003

www.stalloysius.edu.in



ST ALOYSIUS COLLEGE(AUTONOMOUS)

MANGALURU - 575 003

Phone: 0824-2449700, 2449701

Fax: 0824-2449705

Email: principal@stalloysius.edu.in

Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

Computations with matrices, Solving system of equations, Linear independence, Linear combinations, Linear transformation to matrices conversion and vice versa, Matrix with respect to change of basis, Finding eigen values and eigen vectors, Orthogonal and orthonormal sets, Gram-Schmidt orthogonalization of the columns, Triangularization, Diagonalization, Singular value decomposition

Computation with groups, subgroups, normality, Verification of Lagrange's Theorem, Isomorphism theorem and Cayley's theorem,

Computation with rings, integral domains and fields, Solving polynomial equations, Test for rational roots.

Plotting functions, Continuity of a function, Differentiability of a function, Mean Value theorem and Taylor's series for a given function, Evaluation of limits by L'Hospital's rule, Evaluation of integrals

The above list may be changed annually with the approval of PG Board of Studies in Mathematics.

Fourth semester

PS 569.4P Computational Lab -2 using FOSS and Problem Working

Finding complementary function and particular integrals of second and higher order ordinary differential equations

ST ALOYSIUS COLLEGE (AUTONOMOUS)

MANGALURU - 575 003

www.stalloysius.edu.in



ST ALOYSIUS COLLEGE(AUTONOMOUS)

MANGALURU - 575 003

Phone: 0824-2449700, 2449701

Fax: 0824-2449705

Email: principal@stalloysius.edu.in

Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

Solving different types of partial differential equations, Classification of second order PDE's into parabola, elliptic and hyperbola.

Solving problems on Cauchy-Riemann equations, Implementation of Milne-Thomson method of constructing analytic functions, Verifying real and imaginary parts of an analytic function being harmonic, Examples connected with Cauchy's integral theorem.

LaTeX – introduction, document preparation

The above list may be changed annually with the approval of PG Board of Studies in Mathematics.

As many of the BOS members expressed that having 5 courses along with the project work in the fourth semester of MSc Mathematics would hinder the academic performance of students, the number of soft core courses has been reduced from 3 to 2 by changing Algebraic Number Theory into an optional course.

In order to balance the distribution of credits, the **Numerical Analysis with Computational Lab** course has been shifted to the **third semester** and the **Ordinary Differential Equations** course to the **second seme**



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

The following shall be the courses of study in the four semesters M.Sc. Mathematics programme (CBCS-PG) from the academic year 2021-22

I Semester

Course Code	Course	Hard Core/Soft core/ Open elective	Credits
PH 561.1	Algebra I	HC	5
PH 562.1	Linear Algebra I	HC	5
PH 563.1	Real Analysis I	HC	5
PS 564.1	Graph Theory	SC	4
PS 565.1	Fluid Mechanics	SC	4
PS 566.1	Operations Research	SC	4

ST ALOYSIUS COLLEGE (AUTONOMOUS)

MANGALURU - 575 003

www.stalloysius.edu.in



ST ALOYSIUS COLLEGE(AUTONOMOUS)

MANGALURU - 575 003

Phone: 0824-2449700, 2449701

Fax: 0824-2449705

Email: principal@stalloysius.edu.in

Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

II Semester

Course Code	Course	Hard Core/Soft core/ Open elective	Credits
PH 561.2	Algebra II	HC	5
PS 562.2	Ordinary Differential Equations	SC	4
PH 563.2	Real Analysis II	HC	5
PS 564.2	Linear Algebra II	SC	4
PS 565.2	Lattice theory	SC	4
PO 566.2	Basic Tools in Mathematics	OE	3
PS 567.2P	Computational Lab-1	SC	2



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

III Semester

Course Code	Course	Hard Core/Soft core/ Open elective	Credits
PH 561.3	Complex Analysis I	HC	5
PH 562.3	Topology	HC	5
PH 563.3	Numerical Analysis with Computational Lab	HC	5
PS 564.3	Commutative Algebra	SC	4
PS 565.3	Multivariate Calculus and Geometry	SC	4
PS 566.3	Probability Theory	SC	4
PO 567.3	Differential Equations and Applications	OE	3



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

IV Semester

Course Code	Course	Hard Core/Soft core/ Open elective	Credits
PH 561.4	Measure Theory and Integration	HC	5
PH 562.4	Complex Analysis II	HC	5
PH 563.4	Project Work	HC	4
PS 564.4	Functional Analysis	SC	4
PS 565.4	Partial Differential Equations	SC	4
PS 566.4	Algebraic Number Theory	SC	4
PS 567.4	Cryptography	SC	4
PS 568.4	Distribution Theory	SC	4
PS 569.4P	Computational Lab-2	SC	2



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

Scheme of Instruction and Examination

I Semester						
Course code	Instruction Hours per Week	Duration of Examination	Marks			Credits
			IA Marks	End Semester Marks	Total	
PH 561.1	5	3 Hours	30	70	100	5
PH 562.1	5	3 Hours	30	70	100	5
PH 563.1	5	3 Hours	30	70	100	5
PS 564.1	4	3 Hours	30	70	100	4
PS 565.1	4	3 Hours	30	70	100	4
PS 566.1	4	3 Hours	30	70	100	4



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

II Semester						
Course code	Instruction Hours per Week	Duration of Examination	Marks			Credits
			IA Marks	End Semester Marks	Total	
PH.561.2	5	3 Hours	30	70	100	5
PS 562.2	4	3 Hours	30	70	100	4
PH 563.2	5	3 Hours	30	70	100	5
PS 564.2	4	3 Hours	30	70	100	4
PS 565.2	4	3 Hours	30	70	100	4
PO 566.2	3	3 Hours	30	70	100	3
PS 567.2P	3	2 hours	15	35	50	2



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

III Semester						
Course code	Instruction Hours per Week	Duration of Examination	Marks			Credits
			IA Marks	End Semester Marks	Total	
PH 561.3	5	3 Hours	30	70	100	5
PH 562.3	5	3 Hours	30	70	100	5
PH 563.3	4(theory)	3 Hours	30	70	100	5
	2(Lab)	2 hours				
PS 564.3	4	3 Hours	30	70	100	4
PS 565.3	4	3 Hours	30	70	100	4
PS 566.3	4	3 Hours	30	70	100	4
PO 567.3	3	3 Hours	30	70	100	3



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

IV Semester						
Course code	Instruction Hours per Week	Duration of Examination	Marks			Credits
			IA Marks	End Semester Marks	Total	
PH 561.4	5	3 Hours	30	70	100	5
PH 562.4	5	3 Hours	30	70	100	5
PH 563.4	8	-	30	70	100	4
PS 564.4	4	3 Hours	30	70	100	4
PS 565.4	4	3 Hours	30	70	100	4
PS 566.4	4	3 Hours	30	70	100	4
PS 567.4	4	3 Hours	30	70	100	4
PS 568.4	4	3 Hours	30	70	100	4
PS 569.4P	3	2 hours	15	35	50	2



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

Mathematics												
Sem	Hard core			Soft core		Open elective			Others			Total
	No of papers	credits	Total credits	No of papers	Total credits	No of papers	credits	Total credits	Computational Lab (soft core)	Project	credits	
I	3	5	15	2	8							23
II	2	5	10	2	8	1	3	3	1(2)		2	23
III	3	5	15	1	4	1	3	3				22
IV	2	5	10	2	8				1(2)	1(4)	6	24
Total			50		28			6			8	92

Semester wise distribution of credits for M.Sc Mathematics programme

EVALUATION SYSTEM

The evaluation system of the course is based on two components.

(90) Continuous evaluation



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

(ii) End semester Examination.

Continuous Evaluation: Based on this internal assessment marks are allotted. It includes the following criterion

Scheme of evaluation of internal assessment marks

- 50 marks for two internal assessment examinations – Two examinations of 90 minutes duration are conducted. Total marks secured are then reduced to 25.
- Three marks are given for class participation.
- Twelve marks are allotted for surprise tests/quiz/ seminar
- Ten marks for assignments and reviews.
- Each Computational Lab shall carry 15 marks for internal assessment based on one lab test of 90 minutes duration and continuous assessment during practical sessions.

Pattern of End Semester Examination

1. Theory Paper:

Each question paper for the theory course shall contain EIGHT questions carrying 14 marks each, out of which FIVE are to be answered. A question may carry subdivisions.

2. Project Report:



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

In the fourth semester, the course PH 563.4 is a project work which the student has to take up under the guidance of a faculty member in the third semester itself. Each student has to submit a project report (dissertation) typed in LaTeX, at the end of the fourth semester. The project work has to be evaluated by one internal and one external examiner

3. Computational Lab:

Each lab exam question paper shall contain 2 questions on lab programs which are to be executed

Agenda 3:

The question papers of the fourth semester examinations of the academic year 2019-20 were thoroughly verified by the members

Agenda 4:

The results of the fourth semester examinations of the academic year 2019-20 were reviewed by the members. Explanation for the low result in some courses was given

Under any other matter the student representative was asked to express her opinion about the programme syllabus. Ms Shreelakshmi said that the introduction of lab component in the syllabus is going to be very useful.

ST ALOYSIUS COLLEGE (AUTONOMOUS)

MANGALURU - 575 003

www.staloysius.edu.in



ST ALOYSIUS COLLEGE(AUTONOMOUS)

MANGALURU - 575 003

Phone: 0824-2449700, 2449701

Fax: 0824-2449705

Email: principal@staloysius.edu.in

Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

Proceedings of the meeting held on 30th November 2021 for the P.G. in Mathematics was held at 2:00pm (via online mode). The following members were present:

1. Dr. Sam Johnson	for, AIP
2. Prof. B. R. Shankar	for, AIP
3. Dr. Sujin George	for, AIP
4. Ms. Karthik Suresh	for, AIP
5. Ms. Anupriya Sathy	AIP
6. Dr. Shubhalakshmi	Shubhalakshmi
7. Ms. Apoorva Sathy	Apoorva Sathy
8. Ms. Latha D'Souza	Latha
9. Ms. Shubhalakshmi	Shubhalakshmi

Signature of the Chairperson

Head of the Dept. of
P.G. Mathematics
St. Aloysius College (Autonomous)
Mangaluru

Date: 30 July 2021

Signature and seal of the Head of the department



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

BOS minutes of the Department of Post Graduate Studies and Research in Mathematics year -2021

Date: 27 April 2021

Venue: Department of PG Studies and Research in Mathematics, LCRI Block, St Aloysius College
(Autonomous), Mangaluru. (virtual mode)

Members Present:

Ms Anupriya Shetty, Chairperson

Prof B R Shankar, Department of Mathematical and Computational Sciences, NITK, Surathkal,
Mangaluru - Subject Expert

Dr Sam Johnson, Associate Professor, Department of Mathematical and Computational
Sciences, NITK, Surathkal, Mangaluru – Vice Chancellor's Nominee

Mr Karthik Suresh, High Performance Computing Engineer, ExxonMobil, Bengaluru,
Karnataka. – Industry Expert

Ms Apoorva Shetty - internal member

Ms Laisha Laveena D'Souza - internal member

Ms Shreelakshmi, Student representative

Agenda:

1. Approval of the syllabus for the course 'Research Methodology and Ethics'

2. Review of results of the odd semester 2020-21



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

Board of Studies meeting was commenced with a silent prayer and the chairperson welcomed all the BOS members.

The minutes of the previous BOS meeting was read by Ms Apoorva Shetty and was approved by the members

Agenda 1. The chairperson proposed the syllabus for the course 'Research Methodology and Ethics' and was approved by the BOS

The syllabus for the course **Research Methodology and Ethics** (Soft core; 4 credits) for the second semester of MSc Mathematics programme to be implemented from the academic year 2021-2022 is given below. In order to inculcate this course in the second semester, the course Ordinary Differential Equations of second semester has been shifted to the first semester.

PS 562.2 Research Methodology and Ethics

Objectives of the Paper:

- To have clear understanding of the meaning and purpose of Research in academics and strategies of Research.
- To acquaint with the knowledge of methodology involved in a scientific Research
- To know writing of a good Research Report.



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

- To understand the ethical issues and practices in research with an awareness of rights and obligations of research participants.
- Understand the process of Intellectual property Rights and its different forms and implications
- To know how to write research papers and publish research papers.

Outcome of the Paper:

- Quality research with scientific methodology
- Production of good Research Reports
- Original Research following ethical guidelines and practices in conducting the research and publication of papers.
- More awareness on Intellectual property Rights and Patents.

Unit 1: Foundation of Research and Research Methodology: (20 Hours)

Research – meaning, characteristics, objectives, motivation in research, need and importance of research. Types of Research, Concept of Theory and Theory Building,

Research Problem – meaning, selecting the problem, sources of problem, statement of a problem; Review of Literature, sources of literature review, identification of research gap; Research Questions; Objectives of the study , Research Report – meaning, features and format, Appendices and References/ Bibliography – styles



Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

Unit 2: Mathematical Writing:

(18 Hours)

Essential rules of grammar, syntax and usage in mathematical writing; more specifics on writing a definition, theorem, writing proofs; mathematical research –meaning and objectives, writing a paper, collaborative work; usage of a Text Editor

Unit 3: Research Ethics, Intellectual Property Rights (IPR) and Publication of Scholarly Papers

(10 Hours)

Ethics – meaning and definition, Scientific conduct – ethics with respect to science and research, scientific misconduct – falsification, fabrication and plagiarism. Publication ethics, publication misconduct, Violation of public ethics, authorship and contributorship, Predatory publishers and journals, Self-plagiarism

IPR – Concept of IPR, nature and characteristics of IPR, origin and development of IPR, Forms of IPR – copyrights, trademarks, patents, Publication – Scholarly/research article – meaning and features of scholarly article, Data base and Research – Data bases, Research Metrics

References:

- Kothari C R - Research methodology: Methods & Techniques. New Age International Publishers, New Delhi, 2nd edition, 2014

ST ALOYSIUS COLLEGE (AUTONOMOUS)

MANGALURU - 575 003

www.stalloysius.edu.in



ST ALOYSIUS COLLEGE(AUTONOMOUS)

MANGALURU - 575 003

Phone: 0824-2449700, 2449701

Fax: 0824-2449705

Email: principal@stalloysius.edu.in

Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

- Walliman N - Your Research Project: A Step by Step Guide for the first time Researcher, Sage Publications, London, 2005
- Steven G Krantz - A Primer of Mathematical Writing. American Mathematical Society, 2nd edition, 2016
- Ethics in Science Education, Research & Governance, Indian National Science Academy (INSA), 2019
- David I Bainbridge - Intellectual Property, Pearson, 10th edition, 2018
- Jayashree Watal - Intellectual Property Rights in the WTO and Developing Countries. Oxford University Press, 2003

Agenda 2: The results of the odd semester examinations the academic year 2020-21 was reviewed

ST ALOYSIUS COLLEGE (AUTONOMOUS)

MANGALURU - 575 003

www.stalloysius.edu.in



ST ALOYSIUS COLLEGE(AUTONOMOUS)

MANGALURU - 575 003

Phone: 0824-2449700, 2449701

Fax: 0824-2449705

Email: principal@stalloysius.edu.in

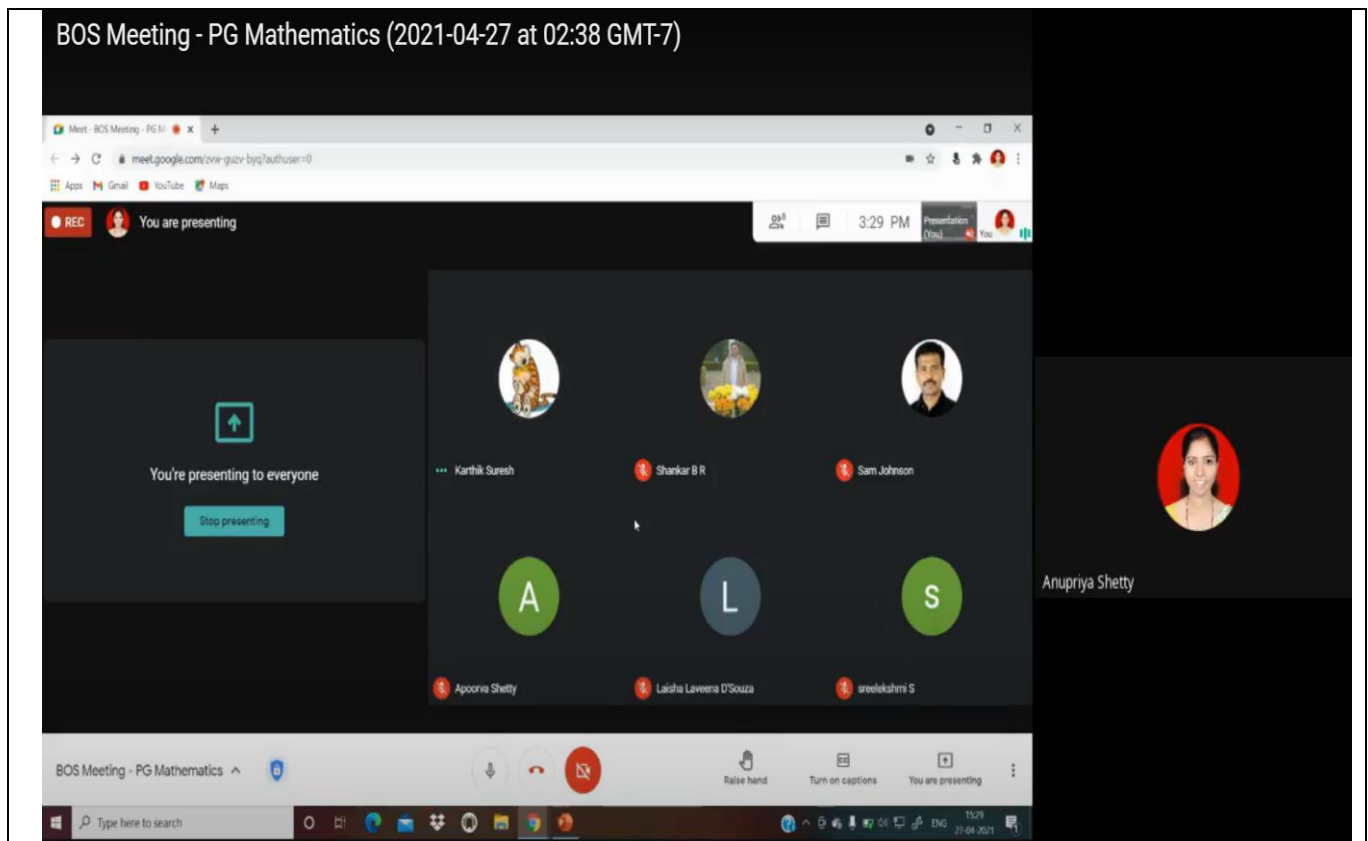
Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

Experts and Members present during the virtual meeting:



ST ALOYSIUS COLLEGE (AUTONOMOUS)

MANGALURU - 575 003

www.staloyusius.edu.in



ST ALOYSIUS COLLEGE(AUTONOMOUS)

MANGALURU - 575 003

Phone: 0824-2449700, 2449701

Fax: 0824-2449705

Email: principal@staloyusius.edu.in

Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4

Recognised by UGC as "College with Potential for Excellence"

Conferred "College with "STAR STATUS" by DBT, Government of India.

Centre for Research Capacity Building under UGC-STRIDE

Members present :

Dr BR Shankar	for,
Dr Sam Johnson	for,
Mr Kasthik Suresh	- for,
Ms Anurupriya Shetty	-
Ms Apodva Shetty	- Apodva Shetty
Ms Kaisha D'Souza	-

Signature of the Chairperson

Date: 30 July 2021

Head of the Dept. of
P.G. Mathematics
Aloysius College (Autonomous)
Mangaluru - 575003

Signature and seal of the head of the department