



Koneru Lakshmaiah Education Foundation

(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)

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To
The Dean –Academics
K L Deemed University
Vaddeswaram

BOS No. 10/2021-22

Dear Sir,

Sub: Minutes of the BOS Meeting, Department of Mathematics held on 23-03-2022 virtually from 4.00 P.M.-Reg.,

Greetings to you.

Department of Mathemtics, K.L.E.F. had conducted BOS meeting on 23-03-2022 virtually from 4.00 P.M. in the following link. Here I am submitting Minutes of meeting for your kind Perusal.

Venue: Virtual class room

<https://teams.microsoft.com/l/team/19%3agOZnpzqTIWFxRa7oN3vSpQCuxfCMriVF5k4BARmQ6wE1%40thread.tacv2/conversations?groupId=2c6a7b71-494d-4837-8585-8a8d416bdfb2&tenantId=808cc83e-a546-47e7-a03f-73a1ebba24f3>

Thanking You,

Yours sincerely

DR. BVAPPA RAO
Professor & Head Dept. of Mathematics
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Minutes of the BOS meeting, Mathematics Department held on 23-03-2022 virtually from 4.00 P.M.

AGENDA ITEMS

1. To **combine** Design Thinking and Innovation (DTI) –1 and course Design Thinking and Innovation (DTI) – 2 as **Design Thinking and Innovation** only from the academic year 2021-22 onwards.
2. Feedbacks on Stakeholder's and their suggestions.
3. Introduction of Informal Learning through SAC and providing the credits for those courses under the Club (Social) with the Program (Connect with Community) and course is CEA.
4. In Y22 Structure & Syllabus the Course "Communication and Logical Skills" with L-T-P-S : 0-0-4-0 proposed.
5. Y21, Y22 PDD (proposed)
6. Y21, Y22 List of courses focussing on Employability/ Entrepreneurship/ Skill Development proposed.
7. List of Value added courses proposed by department (DTI).
8. New Evaluation plan proposed by department.
9. MOOC's Courses proposed.
10. Work in lieu courses proposed.
11. Revision of Pre Ph.D courses and to introduce new Pre-Ph.D. courses.
12. Department of Mathematics will offer a program: Minor in Mathematics.
13. From the Academic year 2022-23 onwards the Mathematics department offers the program M.Sc Applied Mathematics minor in computer applications in collaboration with Master of computer science and applications(M.C.A) department.

AGENDA and RESOLUTIONS

AGENDA ITEM-1

To combine Design Thinking and Innovation (DTI) –1 and course Design Thinking and Innovation (DTI) – 2 as Design Thinking and Innovation only from the academic year 2021-22 onwards.	Approved and recommended to Academic Council for approval
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Dr.B.V.Appa Rao, Professor & H.O.D, Dr.V.S.Bhagavan, Professor, Dr.N.Srimannarayana, Professor, suggested that DTI-1 and DTI-2 to be as a single DTI. Also suggested the same courses of Y21 in Y22 curriculum also.

(Annexure 1)

AGENDA ITEM-2

Feedbacks on Stakeholder's and their suggestions.	Approved and recommended to Academic Council for approval
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It is resolved to approve the Stakeholder's feedbacks.


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AGENDA ITEM-3

Introduction of Informal Learning through SAC and providing the credits for those courses under the Club (Social) with the Program (Connect with Community) and course is CEA.

Approved and recommended to Academic Council for approval

It is resolved not approve any SAC courses for M.Sc.(Applied Mathematics)

AGENDA ITEM-4

In , Y22 Structure & Syllabus the Course "Communication and Logical Skills" with L-T-P-S : 0-0-4-0 proposed.

Approved and recommended to Academic Council for approval

- Dr.Debasish Datta, Professor, NIT, Warangal, recommended the syllabus and curriculum of Y21 for Y22 also. Simhadri Suresh Kumar, Senior Manager Data Science, Capital One, Bangalore, recommended Y22 courses as per the present industry needs.
- The course "Communication and Logical Skills" with L-T-P-S : 0-0-4-0 proposed in Y22 curriculum from A.Y.: 2022-23 onwards based on the recommendations of Dean(Academics).

(Annexure-1)

AGENDA ITEM-5

Y21, Y22 PDD (proposed)

Approved and recommended to Academic Council for approval

It is resolved to propose the Y21, Y22 PDD documents.

AGENDA ITEM-6

Y21, Y22 List of courses focussing on Employability/ Entrepreneurship/ Skill Development proposed.

Approved and recommended to Academic Council for approval

It is resolved to give a list of EES courses.

(Annexure-2)

AGENDA ITEM-7

List of Value added courses proposed by department (DTI).

Approved and recommended to Academic Council for approval

It is resolved not to add any courses proposed by department of DTI

AGENDA ITEM-8

New Evaluation plan proposed by department

Not recommended any new Evaluation Plan

It is resolved to propose the new evaluation plan.

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AGENDA ITEM-9

MOOC's Courses proposed.	Not recommended any MOOC's courses.
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It is resolved not to propose any MOOC's courses.

AGENDA ITEM-10

Work in lieu courses proposed.	Not recommended any Work-in lieu courses.
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It is resolved not to propose any work-in lieu courses.

AGENDA ITEM-11

Revision of Pre Ph.D courses and to introduce new Pre-Ph.D. courses	Recommended to add new Pre-Ph.D. Courses.
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Dr.Debasish Datta, Professor, NIT, Warangal, all the points in DAC are recommended and the following new Pre-Ph.D. courses suggested as per the present research development in Mathematics.

22MAT316	Reliability Theory and its Applications
22MAT317	Fixed Point Theory
22MAT318	Boolean Algebra
22MAT319	Graph Theory
22MAT320	Computational Fluid Dynamics

(Annexure-3)

AGENDA ITEM-12

Department of Mathematics will offer a program: Minor in Mathematics	Approved and recommended to Academic Council for approval
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Dr.G.V.Ramana Reddy, Professor, Dr.Ch.V.Ramanamurthy recommended Minors in Mathematics [Students have to acquire a minimum of 20 credits as University Wide Electives (UWE) from the courses offered by the Department of Mathematics].

AGENDA ITEM-13

From the Academic year 2022-23 onwards the Mathematics department offers the program M.Sc Applied Mathematics minor in computer applications in collaboration with Master of computer science and applications(M.C.A) department.	Approved and recommended to Academic Council for approval
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Dr.G.V.Ramana Reddy, Professor, Dr.Ch.V.Ramanamurthy, recommended from A.Y.: 2022-23 onwards the Mathematics department offers the program M.Sc(Applied Mathematics) with minor in computer applications in collaboration with Master of computer science and applications(M.C.A) department.


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S.NO	NAME OF THE PERSON	DESIGNATION	Position in Meeting	Signature
1	Dr B V Appa Rao Professor & HOD	Department of Mathematics, KLEF	Chairman	
2	Dr.V.N.Sailaja	Department of M.B.A., Associate Dean(Academics)	Member from ODA	
3	Dr V Vasanta Kumar Professor	Department of Mathematics	Internal Member	
4	Dr Ch V Ramana Murty Professor	Department of Mathematics	Internal Member	
5	Dr V S Bhagavan Professor	Department of Mathematics	Internal Member	
6	Dr G V Ramana Reddy Professor	Department of Mathematics	Internal Member	
7	Dr N Srimannarayana Professor	Department of Mathematics	Internal Member	
8	Dr V B V N Prasad Professor	Department of Mathematics	Internal Member	
9	Dr G Suresh Kumar Associate Professor	Department of Mathematics	Internal Member	
10	Dr T.Srinivasa Rao Associate Professor	Department of Mathematics	Internal Member	
11	Dr.T.Eswarlal Associate Professor	Department of CDOE	Member from CDOE	
12	Dr K Rajya Lakshmi Assistant Professor	Department of Mathematics	Internal Member	


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Annexure:1;(Curriculum)

Y22_Course Structure(2022-23)

SNO	COURSE CODE	COURSE NAME	Type	L	T	P	S	CH	CR	Pre requisites
1	22UC1101	Integrated Professional English	HSS	0	0	4	0	4	2	NIL
2	22UC1203	Design Thinking and Innovation	HSS	1	0	0	4	5	2	NIL
3	22AM1101	Real Analysis	PC	4	0	0	0	4	4	NIL
4	22AM1102	Ordinary Differential Equations	PC	3	0	2	0	3	4	NIL
5	22AM1103	Discrete Mathematics	PC	3	1	0	0	4	4	NIL
6	22AM1104	Introduction to Computer Programming	PC	3	0	2	0	5	4	NIL
7	22AM1105	Mathematical Statistics	PC	3	1	0	0	4	4	NIL
8	22AM1106	Seminar-1	PC	0	0	2	0	1	1	NIL
9	22AM1201	Abstract Algebra	PC	3	0	0	0	3	3	NIL
10	22AM1202	Data Structures	PC	3	0	2	0	5	4	NIL
11	22AM1203	Statistical Inference	PC	3	1	0	0	4	4	NIL
12	22AM1204	Numerical Analysis	PC	3	0	2	0	5	4	NIL
13	22AM1205	Complex Analysis	PC	3	1	0	0	4	4	NIL
14	22AM1206	Technical Skills	Skill	0	0	0	4	4	1	NIL
15	22AM1207	Seminar-2	PC	0	0	2	0	2	1	NIL
16	22AM2101	Topology	PC	3	0	0	0	3	3	NIL
17	22AM2102	Partial Differential Equations	PC	3	1	0	0	4	4	NIL
18	22AM2103	Continuum Mechanics	PC	3	1	0	0	4	4	NIL
19	22AM2104	Statistics with R Programming	PC	3	0	2	0	5	4	NIL
20	22AM2105	Seminar-3	PC	0	0	2	0	2	1	NIL
21	22AM2201	Fluid Dynamics	PC	3	0	2	0	5	4	NIL
22	22AM2202	Transform Techniques	PC	3	0	2	0	5	4	NIL
23	22AM2203	Dissertation with Research Publication	PC	0	0	24	0	24	12	NIL
		Elective-I								
24	22AM2106	Operations Research	PE	3	1	0	0	4	4	NIL
25	22AM2107	Functional Analysis	PE	3	1	0	0	4	4	NIL
26	22AM2108	Fuzzy mathematics and applications	PE	3	1	0	0	4	4	NIL
		Elective-II								
27	22AM2204	Mathematical Modelling	PE	3	1	0	0	4	4	NIL
28	22AM2205	Mathematical Control Theory	PE	3	1	0	0	4	4	NIL
29	22AM2206	Dynamical Systems	PE	3	1	0	0	4	4	NIL
		Elective-III								
30	22AM2207	Advanced Numerical Analysis	PE	3	0	2	0	5	4	NIL
31	22AM2208	Number Theory	PE	3	1	0	0	4	4	NIL
32	22AM2209	Applied Stochastic Processes	PE	3	1	0	0	4	4	NIL


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Annexure:2

Program Structure :

SN O	COURSE CODE	COURSE NAME	Type	L	T	P	S	C H	C R	Pre requisite s	New Course/Revised/Retained Course	Changes Proposed By	Focused on Employability/Entrepreneurship/
1	22AM1101	Real Analysis	PC	4	0	0	0	4	4	NIL	Retained Course		Employability
2	22AM1102	Ordinary Differential Equations	PC	3	0	2	0	3	4	NIL	Retained Course		Employability
3	22AM1103	Discrete Mathematics	PC	3	1	0	0	4	4	NIL	Retained Course		Employability
4	22AM1104	Introduction to Computer Programming	PC	3	0	2	0	5	4	NIL	Retained Course		Employability
5	22AM1105	Mathematical Statistics	PC	3	1	0	0	4	4	NIL	Retained Course		Employability


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5	22AM1106	Seminar-1	PC	0	0	2	0	1	1	NIL	Retained Course	Employability
7	22UC1101	Communication and Logical Skills	HSS	0	0	4	0	4	2	NIL	Retained Course	Employability
8	22AM1201	Abstract Algebra	PC	3	0	0	0	3	3	NIL	Retained Course	Employability
9	22AM1202	Data Structures	PC	3	0	2	0	5	4	NIL	Retained Course	Employability
10	22AM1203	Statistical Inference	PC	3	1	0	0	4	4	NIL	Retained Course	Employability
11	22AM1204	Numerical Analysis	PC	3	0	2	0	5	4	NIL	Retained Course	Employability
12	22AM1205	Complex Analysis	PC	3	1	0	0	4	4	NIL	Retained Course	Employability

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13	22AM1206	Technical Skills	PC	0	0	0	0	4	4	1	NIL	Retained Course	Employability
14	22AM1207	Seminar-2	PC	0	0	2	0	2	1		NIL	Retained Course	Employability
15	22UC1203	Design Thinking and Innovation	HSS	0	0	0	4	4	2		NIL	Retained Course	Entrepreneurship/Skill
16	22AM2101	Topology	PC	3	0	0	0	3	3		NIL	Retained Course	Employability
17	22AM2102	Partial Differential Equations	PC	3	1	0	0	4	4		NIL	Retained Course	Employability
18	22AM2103	Continuum Mechanics	PC	3	1	0	0	4	4		NIL	Retained Course	Employability
19	22AM2104	Statistics with R Programming	PC	3	0	2	0	5	4		NIL	Retained Course	Employability

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20	22AM2105	Seminar-3	PC	0	0	2	0	2	1	NIL	Retained Course	Employability
21	22AM2201	Fluid Dynamics	PC	3	0	2	0	5	4		Retained Course	
22	22AM2202	Transform Techniques	PC	3	0	2	0	5	4	NIL	Retained Course	Employability
23	22AM2203	Dissertation with Research Publication	PC	0	0	2	0	24	12	NIL	Retained Course	Employability
		Elective-I										
24	22AM2106	Operations Research	PE	3	1	0	0	4	4	NIL	Retained Course	Employability
25	22AM2107	Functional Analysis	PE	3	1	0	0	4	4	NIL	Retained Course	Employability


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26	22AM2108	Fuzzy mathematics and applications	PE	3	1	0	0	4	4	NIL	Retained Course	Employability
		Elective-II									Retained Course	
27	22AM2204	Mathematical Modelling	PE	3	1	0	0	4	4	NIL	Retained Course	Employability
28	22AM2205	Mathematical Control Theory	PE	3	1	0	0	4	4	NIL	Retained Course	Employability
29	22AM2206	Dynamical Systems	PE	3	1	0	0	4	4	NIL	Retained Course	Employability
		Elective-III									Retained Course	
30	22AM2207	Advanced Numerical Analysis	PE	3	0	2	0	5	4	NIL	Retained Course	Employability
31	22AM2208	Number Theory	PE	3	1	0	0	4	4	NIL	Retained Course	Employability


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32	23AM2209	Applied Stochastic Processes	PE	3	1	0	0	4	4	Retained Course	Employability
										NIL	

Percentage of Syllabus Revision = $0/32 = 0\%$

Percentage of Courses focusing on Employability = $31/32 = 96.875\%$

Percentage of Courses focusing on Entrepreneurship = $1/32 = 3.125\%$

Percentage of Courses focusing on Skill Development = $1/32 = 3.125\%$


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Annexure:3(Pre-Ph.D. Courses)

S.No	Course Code	Course Name	Type	L	T	P	S	CH	CR	Pre Requisites	New Course/Revised/Retained Course	Changes Proposed By	Focused on Employability/Entrepreneurship
1	21RES102	Research Methodology	PC	4	0	0	0	4	4	NIL	Retained Course		Employability
2	22AM1101	Real Analysis	PC	4	0	0	0	4	4	NIL	Retained Course		Employability
3	21MAT201	Topology	PC	4	0	0	0	4	4	NIL	Retained Course		Employability
4	21MAT202	Numerical Methods	PC	4	0	0	0	4	4	NIL	Retained Course		Employability
5	21MAT203	Time Scale Calculus	PC	4	0	0	0	4	4	NIL	Retained Course		Employability
6	21MAT204	Number Theory	PC	4	0	0	0	4	4	NIL	Retained Course		Employability
7	21MAT205	Special Functions	PC	4	0	0	0	4	4	NIL	Retained Course		Employability
8	21MAT206	Boundary Value Problems	PC	4	0	0	0	4	4	NIL	Retained Course		Employability
9	21MAT207	Distribution and Estimation Theory	PC	4	0	0	0	4	4	NIL	Retained Course		Employability
10	21MAT208	Mathematical Methods & Stochastic Processes	PC	4	0	0	0	4	4	NIL	Retained Course		Employability

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11	21MAT209	Statistical Inference	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
12	21MAT301	Fluid Dynamics	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
13	21MAT302	Fluid Mechanics	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
14	21MAT303	Tribology of Bearings	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
15	21MAT304	Fuzzy Algebra	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
16	21MAT305	Functional Analysis	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
17	21MAT306	Semi Groups	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
18	21MAT307	Dynamical Systems on Time Scale	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
19	21MAT308	Differential Equations	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
20	21MAT309	Cryptography	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
21	21MAT310	Hyper Geometric Functions and Lie Groups	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
22	21MAT311	Queueing Theory	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
23	21MAT312	Sampling Theory	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
24	21MAT313	Differential Geometry	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
25	21MAT314	Inventory Model	PC	4	0	0	0	4	4	NIL	Retained Course	Employability
26	21MAT315	Difference Equations	PC	4	0	0	0	4	4	NIL	Retained Course	Employability

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27	22MAT316	Reliability Theory and its Applications	PC	4	0	0	0	4	4	NIL	New Course	Academic Peers	Employability
28	22MAT317	Fixed Point Theory	PC	4	0	0	0	4	4	NIL	New Course	Academic Peers	Employability
29	22MAT318	Boolean Algebra	PC	4	0	0	0	4	4	NIL	New Course	Academic Peers	Employability
30	22MAT319	Graph Theory	PC	4	0	0	0	4	4	NIL	New Course	Academic Peers	Employability
31	22MAT320	Computational Fluid Dynamics	PC	4	0	0	0	4	4	NIL	New Course	Academic Peers	Employability

Percentage of Syllabus Revision=5/31 = 16.1%

Percentage of Courses focusing on Employability= 31/31= 100%

Percentage of Courses focusing on Entrepreneurship= 0/32 = 0%

Percentage of Courses focusing on Skill Development = 0/32 = 0 %


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Syllabus:

22MAT316-Reliability Theory and its Applications

The theory of Markov processes, and reliability theory, Life length distributions and estimation methods for them, based on both complete and censored data are included. Methods for deciding life lengths for systems of independent component, both for repairable and non-repairable systems. Non-repairable systems, methods for computing reliability for whole systems and different measures of the importance of the individual components. Repairable systems, the theory of Markov processes, compute various life length- and reliability measures.

Text Books :

1. "Reliability Engineering" by Kailash C. Kapur and Michael P. Lamberson
2. "Introduction to Probability and Statistics for Engineers and Scientists" by Sheldon M. Ross
3. "Reliability Engineering and Risk Analysis: A Practical Guide" by Mohammad Modarres, Mark Kaminskiy, and Vasiliy Krivtsov

22MAT317-Fixed Point Theory

Contraction Principle, and its variants and applications Fixed points of non-expansive maps and set valued maps, Brouwer-Schauder fixed point theorems, Ky Fan Best Approximation Theorem, Principle and Applications of KKM - maps, their variants and applications. Fixed Point Theorems in partially ordered spaces and other abstract spaces. Application of fixed point theory to Game theory and Mathematical Economics.

Text Books :

1. Fixed Point Theory and Applications" by Ravi P. Agarwal, Maria Meehan, and Donal O'Regan
2. "Fixed Point Theory" by Martin Brokate and Juri Engel
3. "Introduction to Topological Spaces and Fixed Point Theory" by Mohamed A. Khamisi and William A. Kirk

22MAT318-Boolean Algebra

Generalities, Fundamental Theorems of Boolean Algebra, The Existence and the Oneness of the Boolean Functions, Representing Logical Functions and Arithmetic Operations by Logical Gates, Binary Switches, Implementing Logical Functions Truth Tables and Canonical Forms of Boolean Functions, Representation Forms of Boolean Functions, Generalities, The Main Properties of Boolean Functions, Boolean Functions of Two Variables Elementary Forms and Terms for Boolean Functions, Elementary Forms, Logical Basic Operations, Symmetrical and Unsymmetrical Boolean Functions, Several Times Running, Sequential Functions. Integrated Circuits, Definition of Integrated Circuits, Steps in Integrated Circuits Design, Integrating Arithmetic and Logic, Storing Data, Reducing Boolean Equations

Text Books :

1. Switching and Finite Automata Theory" by Zvi Kohavi and Niraj K. Jha
2. "Boolean Algebra and Its Applications" by J. Eldon Whitesitt
3. "Digital Logic and Computer Design" by M. Morris Mano


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22MAT319-Graph Theory

Fundamental concepts of graphs. Basic definitions of graphs and multigraphs; adjacency matrices, isomorphism, girth, decompositions, independent sets and cliques, graph complements, vertex colouring, chromatic number, important graph like cubes and the Petersen graph, Paths, cycles, and trails; Eulerian circuits c. Vertex degrees and counting; large bipartite subgraphs, the handshake lemma, Havel-Hakim Theorem, Directed graphs: weak connectivity, connectivity, strong components e. Induction and other fundamental proof techniques Basics: equivalent characterizations of trees, forests, Spanning trees and 2-switches c. Distance and centre d. Optimization: Kreskas's Theorem and Dijkstra's Theorem 3. Matching and covering Bipartite matching, vertex cover, edge cover, independent set, M-alternating path, Hall's Theorem, König-Egeváry Theorem, Gallai's Theorem Connectivity. Vertex cuts, separating sets, bonds; vertex and edge connectivity, block-cut point tree. Merger's Theorem: undirected vertex and edge versions Network flow. Ford-Fulkerson Labelling algorithm, flow integrity, Max-flow/Min-cut Theorem, proof of Merger's Theorem. Colouring. Chromatic number: lower bounds from clique number and maximum independent set, upper bounds from greedy colouring (& Welsh-Powell).

Text Books :

1. Kenneth, H. R., Discrete Mathematics and its Applications, 7th Ed., Tata McGraw Hill, 2012
2. Liu, C. L., Elements of Discrete Mathematics, Tata McGraw Hill, 2007
3. Johnsonbaugh, R., Discrete Mathematics, 6thEd., Maxwell Macmillan International, 2006

22MAT320-Computational Fluid Dynamics

Introduction to Computational Fluid Dynamics and Principles of Conservation: Continuity Equation, Navier Stokes Equation, Energy Equation and General Structure of Conservation Equations, Classification of Partial Differential Equations and Physical Behaviour, Approximate Solutions of Differential Equations: Error Minimization Principles. Fundamentals of Discretization: Finite Element Method, Finite Difference and Finite Volume Method, Consistency, Stability and Convergence. 1-D Steady State Diffusion Problems- Source term linearization, Implementation of boundary conditions, 1-D unsteady state diffusion problems: implicit, fully explicit and Crank-Nicholson scheme. Finite volume discretization of convection-diffusion problem. Central difference scheme, Upwind scheme, Exponential scheme and Hybrid scheme, Power law scheme, Generalized convection-diffusion formulation, Finite volume discretization of two-dimensional convection-diffusion problem. The concept of false diffusion, QUICK scheme, TVD schemes and flux limiter functions. Finite Volume Discretization of 2-D unsteady State Diffusion type Problems, Solution of Systems of Linear Algebraic Equations: Elimination Methods, Iterative Methods, Discretization of Navier Stokes Equations, primitive variable approach.

Text Books :

1. "Computational Fluid Dynamics: Principles and Applications" by Jiri Blazek
2. "An Introduction to Computational Fluid Dynamics: The Finite Volume Method" by H.K. Versteeg and W. Malalasekera
3. "Numerical Heat Transfer and Fluid Flow" by Suhas V. Patankar
4. "Computational Fluid Dynamics: A Practical Approach" by Jiyuan Tu, Guan Heng Yeoh, and Chaoqun Liu


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S.No	Recommendations	Action taken	Name of the Programme	Department
1. Students				
1	No specific comments on Curriculum		M.Sc.(Applied Mathematics)	Mathematics
2. Parents				
1	No specific comments on Curriculum		M.Sc.(Applied Mathematics)	Mathematics
3. Alumni				
1	No specific comments on Curriculum		M.Sc.(Applied Mathematics)	Mathematics
4. Faculty				
1	Dr B.V.Appa Rao, Professor & H.O.D, Dr V.S.Bhagavan, Professor, Dr N.Srimannarayana, Professor, suggested that DTI-1 and DTI-2 to be as a single DTI. Also suggested the same courses of Y21 in Y22 also.	As per their recommendations, introducing only one DTI course. Also As per their suggestions, same courses of Y21 taken into consideration for Y22 and forwarded it Academic Council for approval.	M.Sc.(Applied Mathematics)	Mathematics
2	Dr G.V.Ramana Reddy, Professor, Dr Ch.V.Ramanamurthy recommended Minors in Mathematics [Students have to acquire a minimum of 20 credits as University Wide Electives (UWE) from the courses offered by the	As per suggestions, in BOS also discussed and forwarded the same to Academic Council for approval.	M.Sc.(Applied Mathematics)	Mathematics

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	Department of Mathematics].			
3	Dr.G.V.Ramana Reddy, Professor, Dr.Ch.V.Ramanamurthy, recommended from A.Y.: 2022-23 on wards the Mathematics department offers the program M.Sc(Applied Mathematics) with minor in computer applications in collaboration with Master of computer science and applications(M.C.A) department	As per suggestions, in BOS discussed and forwarded it to Academic Council for approval.	M.Sc.(Applied Mathematics)	Mathematics
5. Academic Peers				
1	Dr.Debasish Datta, Professor, NIT, Warangal, recommended the the syllabus and curriculum of of Y21 for Y22 also.	As per their suggestions discussed the syllabus of Y21 for Y22 Curriculum and forwarded to Academic Council for approval.	M.Sc.(Applied Mathematics)	Mathematics
2	Dr.Debasish Datta, Professor, NIT, Warangal, all the points in DAC are recommended and new Pre-Ph.D. courses suggested as per the present research development in Mathematics.	Introduced the new pre-Ph.D. courses for Y22 batch and forwarded it to Academic Council for approval.	M.Sc.(Applied Mathematics)	Mathematics
6. Industry				
1	Simhadri Suresh Kumar, Senior Manager Data Science, Capital One, Bangalore, recommended Y22 courses as per the present industry needs.	As per his suggestions discussed the syllabus of Y21 for Y22 Curriculum and forwarded to Academic Council for approval.	M.Sc.(Applied Mathematics)	Mathematics

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AAA:

Percentage Change in syllabus A.Y. : 2021-22								
S. No	Course Code	Course Title	Existing Syllabus	New Syllabus	Topics added/rmored/replaced	Changes in Course Outcome(s)	Justification for no change in percentage of change in syllabus	Revision(%)
1		Communication and Logical Skills		Critical reading, Tenses, Spotting errors, Sentence completion, Sentence rearrangement , and Paragraph writing. SWOT, Goal Setting, Listening skills, Leadership, Presentation Skills, Public speaking, Jam, Time Management, Email Etiquette. :Numbers- Divisibility Rules, Units Digit, Remainders, LCM & HCF, Simplification, Problems On Ages, Ratio & Proportion, Partnership, Averages &Alligations, Percentages, Profit & Loss, Simple & Compound Interest, Data Interpretation Number & Letter Series and Analogy, Coding-Decoding, Odd Man Out, Blood Relations,			By the recommendations of Dean(Academics) and Parents	100%

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2	22MAT31 7	Fixed Point Theory	processes , Compute various life length- and reliability measures. Contraction Principle, and its variants and applications. Fixed points of non-expansive maps and set valued maps, Brouwer-Schauder fixed point theorems, Ky Fan Best Approximation Theorem, Principle and Applications of KKM - maps, their variants and applications. Fixed Point Theorems in partially ordered spaces and other abstract spaces. Application of fixed point theory to Game theory and Mathematical Economics.	By the recommendations of Academic Peers	100%
3	22MAT31 8	Boolean Algebra	Generalities, Fundamental Theorems of Boolean Algebra, The Existence and the Oneness of the Boolean Functions, Representing Logical Functions and Arithmetic Operations by Logical Gates, Binary Switches, Implementing Logical Functions. Truth Tables and Canonical Forms of Boolean Functions, Representation Forms of Boolean Functions, Generalities, The Main Properties of Boolean Functions, Boolean Functions of Two Variables. Elementary Forms and Terms for Boolean Functions, Elementary Forms, Logical Basic Operations, Symmetrical and Unsymmetrical Boolean Functions, Several Times Running, Sequential Functions. Integrated Circuits, Definition of Integrated Circuits, Steps in Integrated Circuits Design, Integrating Arithmetic and Logic, Storing Data, Reducing Boolean Equations	By the recommendations of Academic Peers	100%

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4	22MAT31	Graph Theory	Fundamental concepts of graphs. Basic definitions of graphs and multigraphs; adjacency matrices, isomorphism, girth, decompositions, independent sets and cliques, graph complements, vertex coloring, chromatic number, important graph like cubes and the Petersen graph, Paths, cycles, and trails; Eulerian circuits c. Vertex degrees and counting; large bipartite subgraphs, the handshake lemma, Havel-Hakimi Theorem , Directed graphs: weak connectivity, connectivity, strong components e. Induction and other fundamental proof techniques. Basics: equivalent characterizations of trees, forests , Spanning trees and 2-switches c. Distance and center d. Optimization: Kruskal's Theorem and Dijkstra's Theorem 3. Matching and covering . Bipartite matching, vertex cover, edge cover, independent set, M-alternating path, Hall's Theorem, König-Egeváry Theorem, Gallai's Theorem Connectivity. Vertex cuts, separating sets, bonds; vertex and edge connectivity, block-cutpoint tree . Menger's Theorem: undirected vertex and edge versions Network flow . Ford-Fulkerson Labeling algorithm, flow integrality, Max-flow/Min-cut Theorem, proof of Menger's Theorem . Coloring . Chromatic number: lower bounds from clique number and maximum independent set, upper bounds from greedy coloring (& Welsh-Powell).	By the recommendations of Academic Peers	100%
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5	22MAT320	Computational Fluid Dynamics	Introduction to Computational Fluid Dynamics and Principles of Conservation: Continuity Equation, Navier Stokes Equation, Energy Equation and General Structure of Conservation Equations, Classification of Partial Differential Equations and Physical Behaviour, Approximate Solutions of Differential Equations: Error Minimization Principles. Fundamentals of Discretization: Finite Element Method, Finite Difference and Finite Volume Method, Consistency, Stability and Convergence. 1-D Steady State Diffusion Problems- Source term linearization, Implementation of boundary conditions, 1-D unsteady state diffusion problems: implicit, fully explicit and Crank-Nicholson scheme. Finite volume discretization of convection-diffusion problem. Central difference scheme, Upwind scheme, Exponential scheme and Hybrid scheme, Power law scheme, Generalized convection-diffusion formulation, Finite volume discretization of two-dimensional convection-diffusion problem. The concept of false diffusion, QUICK scheme, TVD schemes and flux limiter functions. Finite Volume Discretization of 2-D unsteady State Diffusion type Problems, Solution of Systems of Linear Algebraic Equations: Elimination Methods, Iterative Methods, Discretization of Navier Stokes Equations, primitive variable approach.	By the recommendations of Academic Peers	100%
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DAC MEETING AGENDA

DAC meeting held on 12th March, 2022 at 2.30 P.M.

Venue: Virtual Mode

The following points were discussed in the Departmental Academic Committee meeting held on **12-03-2022** virtually at 2.30 P.M.

Link :

<https://teams.microsoft.com/l/team/19%3agOZnpzqTIWFxRa7oN3vSpQCuxfCMriVF5k4BARmQ6wE1%40thread.tacv2/conversations?groupId=2c6a7b71-494d-4837-8585-8a8d416bdfb2&tenantId=808cc83e-a546-47e7-a03f-73a1ebba24f3>

AGENDA of the meeting: to discuss academic related issues & inclusion of new courses /disciplines in the department

As per the agenda, the following points were discussed. After that, reviewed and resolved the following items

1. To **combine** Design Thinking and Innovation (DTI) –1 and course Design Thinking and Innovation (DTI) – 2 as **Design Thinking and Innovation** only from the academic year 2021-21 onwards(**Annexure 1**).
2. Feedbacks on Stakeholder's and their suggestions.
3. Introduction of Informal Learning through SAC and providing the credits for those courses.
4. Y22 Structure & Syllabus(New Course on Communication Skills Proposed)(Annexure-1).
5. Y21, Y22 PDD (proposed)
6. Y21, Y22 List of courses focussing on Employability/ Entrepreneurship/ Skill Development proposed.
7. List of Value added courses proposed by department.
8. New Evaluation plan proposed by department.
9. MOOC's Courses proposed.
10. Work in lieu courses proposed
11. Pre Ph.D courses revision and new courses proposed.
12. Minor in Mathematics proposed.
13. From A.Y.: 2022-23 onwards the Mathematics department offers the program M.Sc (Applied Mathematics), minor in computer applications in collaboration with Master of computer science and applications(M.C.A) department proposed.


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DAC Annexure 1

Sl. No.	Course Code	Name of the Course	L	T	P	S	Credits	New Course/Revised Course/Retained Course	Changes Proposed By	Employability / Entrepreneurship / Skill Development	Justification
1	22UC1203	Design Thinking and Innovation	1	0	0	4	2	Added Course	Dean(Academics)	HSS	It plays vital role towards enhancing the career prospects of the students
2	22UC1101	Communication and Logical Skills	0	0	4	0	2	Added Course	Dean(Academics)	HSS	It plays vital role towards enhancing the career prospects of the students


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DAC_Annexure-2

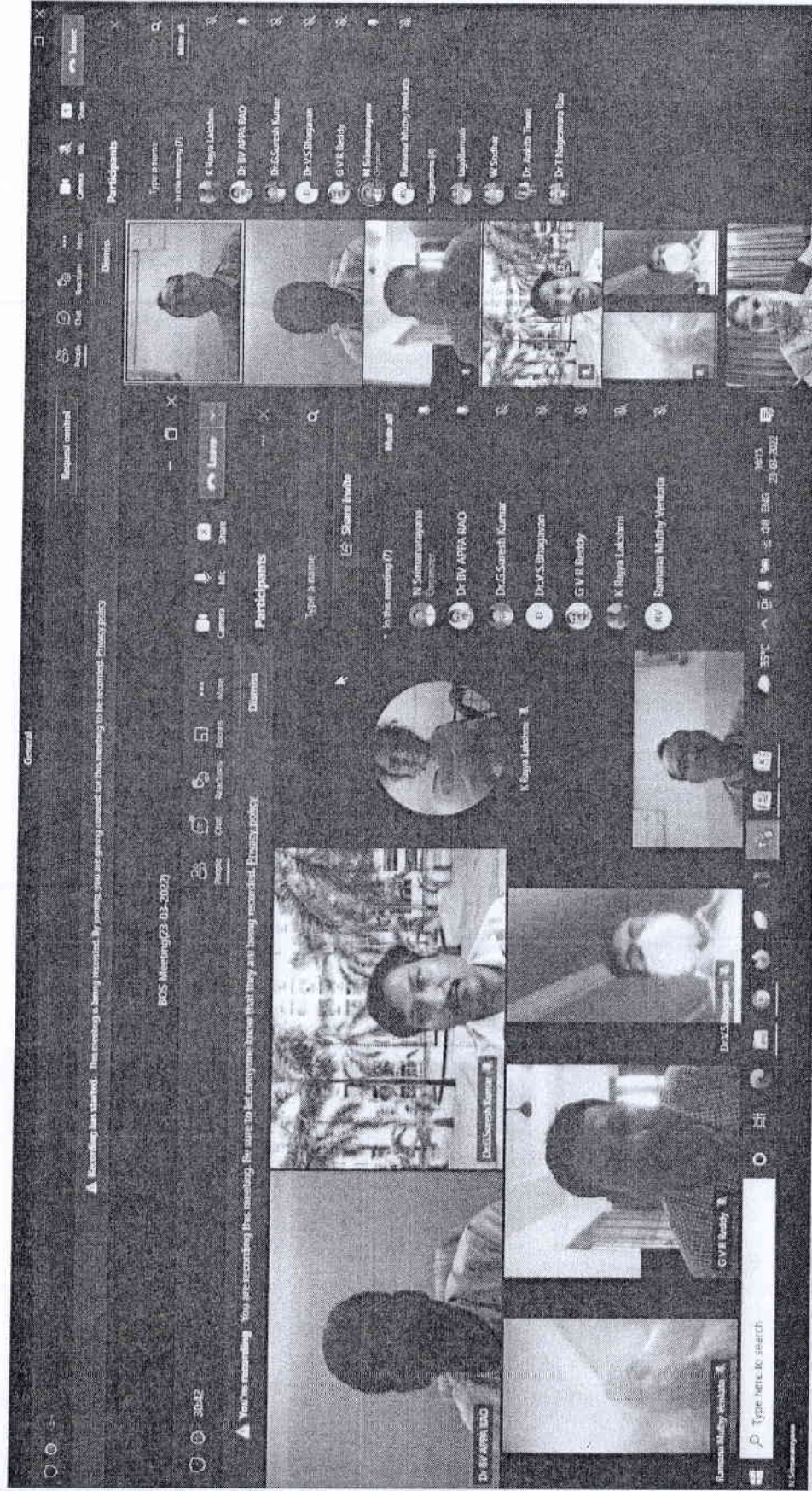
S.No	Recommendations	Action taken	Name of the Programme	Department
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BOS Meeting(23-03-2022)



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BOS Meeting (Preceding an Academic Year)

AGENDA and RESOLUTIONS

AGENDA ITEM-1

1.Confirmation of Minutes of the previous meeting of the Board of Studies	Approved
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AGENDA ITEM-2

In Y21 regulation, combined DTI-1 and DTI-2 courses and renamed as D.T.I.	Approved
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It was resolved to combine DTI-1 and DTI-2 from the program as per the guidelines of the Dean(Academics).


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