Dept. of Mathematics&Humanities

WELCOME

TO

CHAIRMAN & MEMBERS OF
NAAC Peer Team

18-19 March, 2024

Dr. K. Shivashanker
Associate Professor & Head
Department of MATHEMATICS & HUMANITIES
KITS, WARANGAL

Dept. of Mathematics&Humanities

Outline

1.Vision & Mission
2.OBE Framework
3.About Department
4.Details of Laboratories
5.Curricular Aspects
6.Teaching-Learning and Evaluation
7.Research, Innovations and Extension
8.Infrastructure and Learning Resources
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Dept. of Mathematics&Humanities:

Vision:

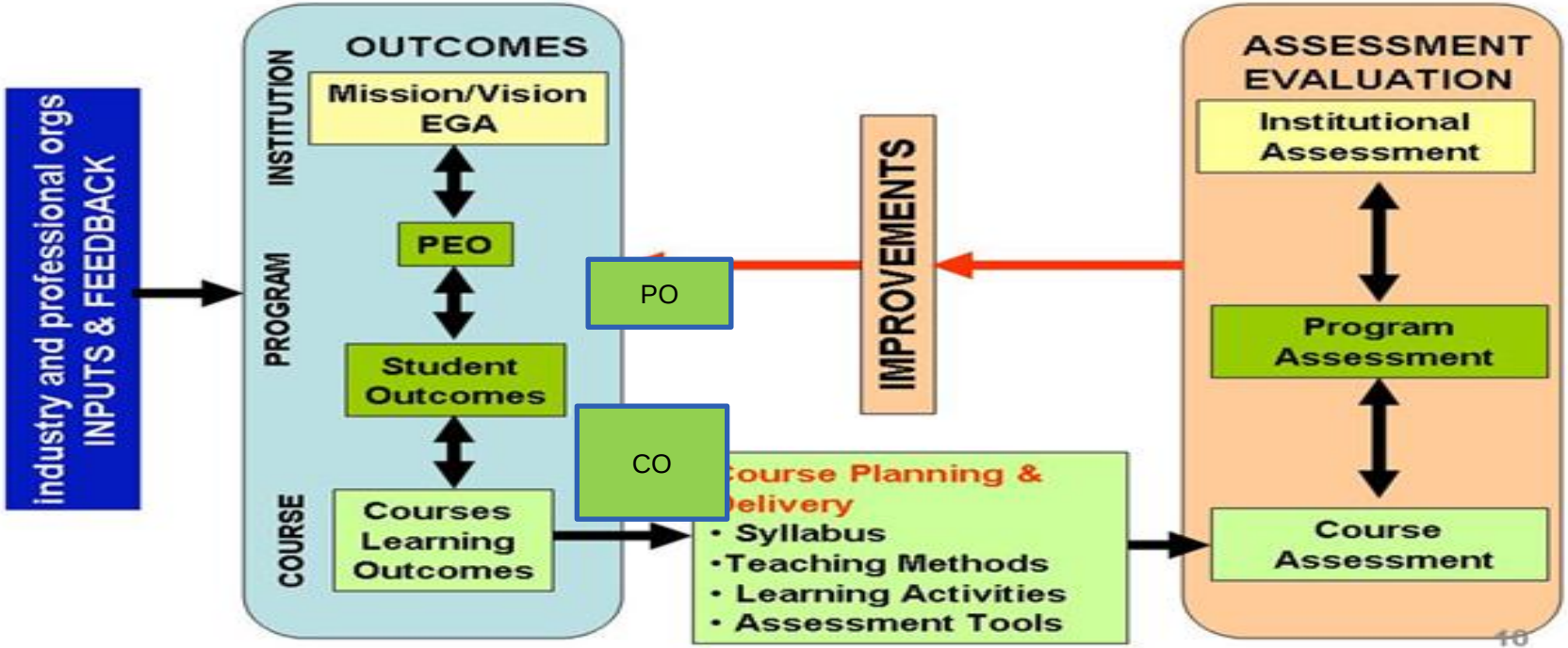
The Mathematics and Humanities department shares the vision of the institute of achieving excellence in teaching and research in providing latest technical knowledge, analytical and practical skills, Managerial competence and interactive abilities to students, so that their employability is enhanced

Mission:

- To cultivate mathematical taste, nurture mathematical interests, motivate research in mathematical sciences so that one can work on challenging real-life problems.
- To impart necessary communication skills and proficiency in English Language so that the presentation skills of the students are improved.
- To develop the oral and written skills of students and to improve their confidence level.
- To make them strong in facing challenges in their career.

Dept. of Mathematics&Humanities:

The OBE Framework



Dept. of Mathematics&Humanities:

Program Outcomes (POs)

POs are statements about the knowledge, skills and attitudes (attributes) the graduate of a formal engineering program should have.

1. **Engineering Knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem Analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/Development of Solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
4. **Conduct Investigations of Complex Problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

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5. **Modern Tool Usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The Engineer and Society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and Sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and Team Work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project Management and Finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long Learning**: Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

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Program Educational Objectives-PEO

The educational objectives of an engineering degree program are the statements that describe the expected achievements of graduates in their career, and also in particular, what the graduates are expected to perform and achieve during the **first few years after graduation**.

Program specific outcomes (PSO)

These outcomes are specific to a program in addition to POs

Dept. of Mathematics&Humanities:

Head of the Department: Dr.K.Shivashanker

Academic Coordinator: Dr.G.Manjulathadevi

No. of faculty: 19

No. of faculty with Pdf: 02

No. of faculty with PhD: 13

No. of faculty pursuing PhD: 01

No. of technical & supporting staff: 02

S.No.	Name of the faculty	Designation	M.Sc.
1	Dr. K.Shivashanker	Asso,.Prof.& Head	NIT, Warangal
2	Dr.R. Ramesh	Asst.Prof.	NIT, Warangal
3	Dr.D.Rajaiah	Asst.Prof.	NIT, Warangal
4	Dr.N.RajiReddy	Asst.Prof.	NIT, Warangal

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LIST OF LABORATORIES

S. No.	Name of the Laboratory	Area (m^2)	Total Cost of Equipment (Rs)
1	ENGLISH LANGUAGE LAB/ PRESENTATION SKILLS LAB	65.00 sq mts	34,98,257

LIST OF SOFTWARE

S. No.	Name of the Software	Name of the supplier/ vendor	Validity	Licensed Software/ Open Software	Cost (Rs)
1	K-VAN SOLUTIONS	Soft Technologies Private Limited	Perpetual license	Licensed software	84,000

Major Equipment

- 72 Computing Systems with K-VAN SOLUTIONS International Software
- LCD Projection System

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Criterion 1 - Curricular Aspects

Curricula is developed and revised on regular basis, based on inputs from the following:

1. Feedback from stakeholders - to meet local requirements
2. Inputs from industry experts (In & abroad) - to meet industry & global developmental needs
3. Suggestions from academicians of reputed institutions - to meet regional & global need

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The procedure for developing curricula is provided below:

- Course Committees are constituted with senior faculty of the department and those who have taught the course for a minimum of two years.
- The course committees look into the local, regional, national and global needs and identify the real-world problems which help in preparing the course content.
- The course contents are put forward to the Board of Studies for approval for necessary inputs.
- Based on the inputs received from the BoS, the course contents will be revised and will be approved by the BoS members

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Criterion 1 - Curricular Aspects

Curricula Summary: (for period 2018-19 to 2022-23)

No. of courses offered : 12

New courses introduced : 04

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The Courses offered for B.Tech program

- Engineering Mathematics-I
- Engineering Mathematics-II
- Engineering Mathematics-III
- Applicable Mathematics
- Discrete Mathematics
- Operations Research
- Essential Mathematics and Statistics for Machine learning
- English for Communication
- Professional English

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The Courses offered for M.Tech program

- Mathematical methods in Engineering
- Mathematical Foundations for Data Science
- Operations Research

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Industry relevant KSQ for the Course OPERATIONS RESEARCH

i) Expected Knowledge (K) areas

K-Table

Knowledge area (K)	Details of knowledge areas to be acquired through the course Operations Research
K1	Concepts of operations research and modeling approaches
K2	Solve engineering and managerial situations as LPP
K3	Non-linear Programming Problem (NLPP)
K4	Queuing system- Elements and operating characteristics

ii) Expected Skills (S)

S-Table

Skills(S)		Details of identified skills *(An engineer has to have skills on...)*
Technical	S1	Formulate and Analyze various operations research modelling approaches using Linear programming
	S2	Evaluate and develop transportation and Assignment problems using various OR techniques
	S3	Solve various Non-linear Programming Problem (NLPP)
	S4	Understand the queueing models having infinite population and apply them in various real time situations.
	S5	Solve various optimization problems using C-programming and objective oriented programming
Non-Technical	S6	Comprehend and write effective reports on optimization problems
	S7	Communicate effectively by presenting ideas orally/through PPTs

iii) Expected Qualities (Q) (Values & Attitudes)

Q-Table

Qualities (Values & Attitudes) (Q)	Details of qualities to be acquired through the course Engineering Mathematics I
Q1	Academic integrity and honesty
Q2	Effective judgment
Q3	Ability to work independently
Q4	Time management

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Criterion 2 - Teaching-learning and Evaluation

Teaching-Learning Process:

- Class work as per Almanac
- Sharing Outcome Based Lecture Schedule (OBLS)
- Prior sharing of course material with outcomes - CDTs, SLTs
- Participative Learning through special Assignments in the form of Course Research Paper & Course Patent Paper
- Peer learning through Programme based Assignments
- Continuous internal assessment through Minor exams, Mid Semester exams, Assignments & Special Assignments
- Flip-classes through Tutorials followed as per tutorial matrix
- Course committee meetings

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Criterion 2 - Teaching-learning and Evaluation

Programmes conducted to cater to differential learning needs of the students:

For Slow learners:

- **Remedial Classes, Tutorials, Class Discussion Materials, Question Bank**

For active learners:

- **Course Patent papers and Course Research Papers - Mathematics &English**
- **Course projects- Mathematics &English**
- **Minor degree - Mathematics &English**

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Criterion 2 - Teaching-learning and Evaluation

- **Effective Mentor-Mentee (Counselor-Counselee) System:**

Procedure -

- ➔ Counsel the students every week during Meet Your Counselor slot
- ➔ The faculty member who acts as counsellor maintains a Counseling record book for each counselee in which personal details of the students including their address, contact numbers, overall academic performance and progress is regularly updated.
- ➔ Monitor the attendance and marks in college management software(CMS), counsel, guide, and motivate the students in all academic matters.

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Criterion 3 - Research, Innovations and Extension

Faculty Achievements

Year	Publications in SCI Journals	Publications in SCOPUS Journals	Publications in OTHER Journals	FDPs/STTPs/ Workshops attended	Workshops / FDPs organized
2023-24:	01	01	05	19	01
2022-23:	01	01	15	12	--
2021-22:	01	01	08	36	---
2020-21:	01	02	08	76	03
2019-20:	02	01	04	48	--
2018-19	01	02	09	66	--

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NPTEL Certifications

Year	Faculty	Students
2023-24	06	
2022-23	03	
2021-22	18	01-Minor program in English
2020-21	03	
2019-20	03	

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Major Research Groups (MRGs)

Fluid Dynamics	Bio Fluid Mechanics	Numerical Methods	Operations Research-Stochastic Process
Dr.K. Shivashankar	Dr.K. Shivashanker	Dr.R. Ramesh	Dr.R. Ramesh
Dr.T. Raghunatha Rao	Dr.T. Raghunatha Rao	Dr.D. Rajaiah	Dr.D. Rajaiah
Dr.K.Venumadav	Dr.K.Venumadav	Dr.V. Anand	Dr.V. Anand
Dr.S.Vishwaprasad rao	Dr.E. Ranjith kumar	Dr.S.Vishwaprasad rao	Dr.B. Yakaiah
Dr. Narahari Rajireddy	Dr.B. Yakaiah	Dr. Narahari Rajireddy	
Dr.B.Sandhyarani	Dr.B.Sandhyarani	Dr.E. Ranjith kumar	

English Literature
Dr.G. Manjulatha Devi
Dr.W. Grace Shanthi
Dr. Asmathunisa Begum

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ABSTRACT OF BUDJET-PROPOSED – SANCTIONED--UTILIZED

A.Y	PROPOSED BUDJET		BUDJET SANCTIONED		BUDJET UTILIZED	
2022-23	Non-Recurring	2,35,000=00	Non-Recurring	2,35,000=00	Non-Recurring	1,65,000=00
	Recurring:	2,10,000=00	Recurring:	2,10,000=00	Recurring:	-----
	Research & Development	5,40,000=00	Research & Development	5,40,000=00	Research & Development	-------
	Total	9,85,000=00	Total	9,85,000=00	Total	1,65,000=00
2021-22	Non-Recurring	2,10,000=00	Non-Recurring	10,000=00	Non-Recurring	--
	Recurring:	1,90,000=00	Recurring:	25,000=00	Recurring:	--
	Research & Development	5,10,000=00	Research & Development	45,000=00	Research & Development	---
	Total	9,10,000=00	Total	80,000=00	Total	
2020-21	Non-Recurring	1,32,000=00	Non-Recurring	1,32,000=00	Non-Recurring	1,23,011=00
	Recurring:	2,13,000=00	Recurring:	1,00,000=00	Recurring:	--
	Research & Development	4,60,000=00	Research & Development	1,00,000=00	Research & Development	---
	Total	8,05,000=00	Total	3,32,000=00	Total	1,23,011=00

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2019-20	Non-Recurring	9,72,000=00	Non-Recurring	32,70,000=00	Non-Recurring	35,65,800=00
	Recurring:	35,000=00	Recurring:	25,000=00	Recurring:	38,0,37=00
	Research & Development	4,02,000=00	Research & Development	3,40,000=00	Research & Development	--
	Total	14,09,000=00	Total	36,35,000=00	Total	36,03,837=00
2018-19	Non-Recurring	9,58,000=00	Non-Recurring	9,58,000=00	Non-Recurring	4,150=00
	Recurring:	40,000=00	Recurring:	20,000=00	Recurring:	--
	Research & Development	30,000=00	Research & Development	--	Research & Development	--
	Total	10,28,000=00	Total	9,78,000=00	Total	4,150=00

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Best Practices of the Department
• Monitoring the students through class teachers. • Conducting SIP/UHV-II more effectively with internal resources • Integrating Research & Entrepreneurship activities in Outcome based Teaching & Learning

SWOC Analysis of the Department

Strength

- ❖ 95% of existing faculty are possessing doctorate degree
- ❖ Average teaching experience of the faculty is more than 13 years
- ❖ Faculty are updating their knowledge by attending continuous education programmes like FDPs, Workshops, Refresher Courses, Certification courses of NPTEL, MOOCS and etc.,.

Weakness:

- ❖ Less number of submissions for research projects.
- ❖ .Research guidance.
- ❖ .Book Publications

Opportunities:

- ❖ Scope for improvement for more number of research quality publications with qualified faculty
- ❖ Scope for conducting FDPs and Workshops.
- ❖ Encouraging faculty to acquire more online certification courses like MOOCS, SWAYAM, NPTEL courses etc

Challenges:

- ❖ Majority of admitted students are with rural background
- ❖ Admitted students are not subjected to concept base education at +2 level (Intermediate).

Short term and Long-Term Goals of the department

Short Term Goals of the Department
Short term goal 1: To minimize the detention of students because of shortage of attendance **Short term goal 2:** To minimize the detention due to backlogs in first year subjects.
Long Term Goal(s) of the Department
1. Quality Research and Research projects 2. Collective research activities are to be increased 3. Develop a system that fosters the overall development of students, including cognitive, social, emotional, and physical development.

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Annual Graduation day

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National Mathematics Day

Thank You

Department of Mathematics and Humanities

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