



**SIR C R REDDY COLLEGE OF ENGINEERING, ELURU
(AUTONOMOUS)**

Approved by AICTE, New Delhi & Accredited by NAAC & NBA, Permanently
Affiliated to JNTU Kakinada, Vatluru, Eluru, Eluru-District, Andhra Pradesh, India -
534007

Dt:01/05/25

Circular

Sub: SIR C R Reddy College of Engineering & Technology, Eluru
-First Year Engineering Department (English) - Board of Studies meeting - Invitation - Reg.

We take the privilege to invite you for the Board of Studies meeting at SIR C R Reddy College of Engineering in, First Year Engineering Department (English) on *01-05-2025(Thursday) at 9:00 A.M.* through Zoom online platform.

Agenda:

1. Introduction of members
2. To discuss and finalize the proposed II B.Tech. II Semester Soft Skills Lab course of CR -24 Regulations.
3. To finalize the Evaluation procedure for Continuous Internal Evaluation (CIE) and Semester End Evaluation (SEE).
4. Ratification of Course Objectives and Course Outcomes, CO-PO Mapping for the proposed subject.
5. Finalization of Text Books and Reference Books.
6. Any other changes with the permission of the chairman.

In this regard, all the members are requested to attend the online mode of Board of Studies meeting of **English** for First Year Engineering Department on *01-05-2025 at 9:00 A.M.* The online meeting link will be mailed you shortly. Kindly accept our invitation and make it convenient to attend the meeting.

Thanking you Sir/Madam,

Yours faithfully,


Dr.Sk.Sadik

HOD, Department of First year Engineering
Sir C.R.Reddy College of Engineering

HEAD

First Year Engineering Department
Sir C.R. Reddy College of Engineering,
ELURU-534 007

Copy to:

1. The Principal, SIRCRRCOE
2. The members of BOS
3. The Dean, Academics
4. Office file



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SIR C R REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

VATLURU, ELURU-534007, ELURU DIST., ANDHRA PRADESH, INDIA

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www.sircrrengg.ac.in, Phone Off: (08812) 230840, Email: principal.sircrrengg@gmail.com

Date:28.04.2025

MEETING OF THE BOARD OF STUDIES IN DEPARTMENT OF FIRST YEAR ENGINEERING

To
Dr. G.Suvarna Lakshmi
Professor, EFLU,
Hyderabad.

Dear Sir/Mam,

**Sub: Sir C R Reddy College of Engineering – Department of First Year Engineering (English) -
Board of Studies Meeting - invitation – Reg.**

We take the privilege to invite you for Board of Studies meeting at Sir C R Reddy College of Engineering in the First Year Engineering Department (English), on 01-05-2025 at 9.30AM.

Agenda:

1. Introduction of BOS Members
2. To discuss and finalize the proposed II B Tech, I & II Semester English courses of CR-24
3. To approve the Model Question Papers
5. To approve the Text books and Reference books
6. To approve the list of Paper setters and evaluators
7. Ratification of Course Objectives and Course Outcomes, CO-PO mapping for the proposed subjects.
8. Any other item with the permission of the chairman

Thanking you sir,

Yours faithfully


Dr Shaik Sadik

CHAIRMAN BOS IN
FIRST YEAR ENGINEERING
First Year Engineering Department
Sir C.R. Reddy College of Engineering
ELURU-534 007

Estd. 1989



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Date:28.04.2025

MEETING OF THE BOARD OF STUDIES IN DEPARTMENT OF FIRST YEAR ENGINEERING

To
Dr. B.V.N.Lakshmi
Head of Department English and Foreign Languages
SRKR Engineering College , Bhimavaram
drbhvnlakshmi@srkrec.ac.in
9440652526

Dear Sir/Mam,

**Sub: Sir C R Reddy College of Engineering – Department of First Year Engineering (English) -
Board of Studies Meeting - invitation – Reg.**

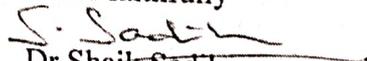
We take the privilege to invite you for Board of Studies meeting at Sir C R Reddy College of Engineering in the First Year Engineering Department (English), on 01-05-2025 at 9.30AM.

Agenda:

1. Introduction of BOS Members
2. To discuss and finalize the proposed II B Tech, I & II Semester English courses of CR-24
3. To approve the Model Question Papers
5. To approve the Text books and Reference books
6. To approve the list of Paper setters and evaluators
7. Ratification of Course Objectives and Course Outcomes, CO-PO mapping for the proposed subjects.
8. Any other item with the permission of the chairman

Thanking you sir,

Yours faithfully


Dr Shaik Sadik

CHAIRMAN, BOS IN
FIRST YEAR ENGINEERING
Department
Sir C.R. Reddy College of Engineering
ELURU-534 007

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Date:28.04.2025

MEETING OF THE BOARD OF STUDIES IN DEPARTMENT OF FIRST YEAR ENGINEERING

To
Dr G G Ratnam
Professor &HOD
Dept of BSH
DNR CET

Dear Sir/Mam,

**Sub: Sir C R Reddy College of Engineering – Department of First Year Engineering (English) -
Board of Studies Meeting - invitation – Reg.**

We take the privilege to invite you for Board of Studies meeting at Sir C R Reddy College of Engineering in the First Year Engineering Department (English), on 01-05-2025 at 9.30AM.

Agenda:

1. Introduction of BOS Members
2. To discuss and finalize the proposed II B Tech, I & II Semester English courses of CR-24
3. To approve the Model Question Papers
5. To approve the Text books and Reference books
6. To approve the list of Paper setters and evaluators
7. Ratification of Course Objectives and Course Outcomes, CO-PO mapping for the proposed subjects.
8. Any other item with the permission of the chairman

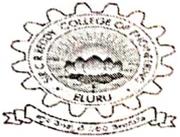
Thanking you sir,

Yours faithfully



Dr Shaik Sadik

CHAIRMAN BOS IN
FIRST YEAR ENGINEERING
First Year Engineering Department
Sir C.R. Reddy College of Engineering
ELURU-534 007



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CR24

Minutes of the Soft Skills Board of Studies First Year Engineering Department meeting held on 01-05-2025 at 09:30 A.M

First Year Engineering Department of Sir C. R. Reddy College of Engineering has convened the BoS meeting of Soft Skills through online mode with the following points of agenda.

Venue: FED Office Room

Meeting held on: 01-05-2025,09:30A.M.

Mode of conducting meeting: Zoom online platform

The members of the BoS have attended the meeting through online mode (External Members) and offline mode (Internal Members).

Meeting link:

<https://us06web.zoom.us/j/84051088522?pwd=WTcsXbz6Aa0Inb1hHFIU9UaX8Pex5x.1>

The screenshot shows a Zoom meeting in progress. The top bar indicates the time is 9:31 AM. The meeting ID is 84051088522. The participants visible in the grid are: CRR EEE, Lakshmi Bhupathiraju, Prasanna, Suvama Lakshmi G, Dr G G Ratnam, and Vijana Kuchipudi. A document titled 'Table of Contents' is displayed on the right side of the screen. The document content includes:

Improving Tips for Listening, Speaking, need- types, advantages, Imp
Improving Tips, Reading- Writing Skills, Report, Resume, statement of
need- types, advantages, Importance-Improving Tips.

IT-V: Non-Verbal Skills & Interview skills

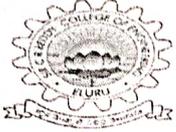
Definition and Meaning - Importance- Facial Expressions- Eye Contact - Pre
Haptics-Posture, cross cultural body language, body language in interview
appearance and dress code - Kinetics- Para Language - tone, pitch
neutralization of accent, use of appropriate language, Interview skills, i
methods and questions.

Books:

1. Sheffield, M. Robert et al. Cornerstone Developing Soft Skills, 4 e, Pearson Publication, N
Delhi, 2014
2. Alka Waskar, Life Skills for Success, 1 e, Sage Publications India Private Limited, 2016

Reference Books:

1. Sambarah M. Technical English, Wiley publishers India, New Delhi 2014
2. Gangadhar Joshi, From Campus to Corporate, SAGETELIT.
3. Alex K. Soft Skills, 3rd ed S Chand Publication, New Delhi, 2014
4. Meenakshi Raman and Sangita Sharma, Technical Communication: Principle and
Practice, Oxford University Press, 2009
5. Shalini Varma, Body Language for Your Success Mantra, 4 e, S Chand Publication, Ne
Delhi, 2014



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Agenda:

7. Introduction of members
8. To discuss and finalize the proposed II B.Tech. II Semester Soft Skills Lab course of CR -24 Regulations.
9. To finalize the Evaluation procedure for Continuous Internal Evaluation (CIE) and Semester End Evaluation (SEE).
10. Ratification of Course Objectives and Course Outcomes, CO-PO Mapping for the proposed subject.
11. Finalization of Text Books and Reference Books.
12. Any other changes with the permission of the chairman.

In this regard, all the members are requested to attend the online mode of Board of Studies meeting of *English* for First Year Engineering Department on 01-05-2025 at 9:00 A.M. The online meeting link will be mailed you shortly. Kindly accept our invitation and make it convenient to attend the meeting.

Thanking you Sir/Madam,

Yours faithfully,

Dr. SK. Sadik

HOD, First Year Engineering Department
Sir C R Reddy College of Engineering, Eluru.

Copy to:

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Minutes of meeting of Board of Studies, First Year Engineering Department (English) held on 01-05-2025 at 9:00 A.M with the following Resolutions:

At the outset, the principal of SIRCRRCOE presented his gratitude to the university nominee and other members of BOS and handed over the session to the chairman of BOS.

Resolution-1: Introduction of Members

The BOS chairman welcomed and introduced the eminent professors of BOS Meeting. He briefed them about structure and pattern of the course. The BOS members expressed their appreciation for novel structure of curriculum and content of the course. The chairman of BOS placed the agenda for the deliberation of the members. The following deliberations were made as per the items of circular agenda.

Resolution-2: Finalization of the proposed II B. Tech. II Semester Soft Skills Lab course, CR -24 Regulation. (Annexure-A)

Resolved the proposed II B. Tech II Semester Soft Skills Lab course under the CR-24 Regulation. After considering the inputs from all members, the course was finalized and approved for implementation in the upcoming academic year 2025- 26.

Resolution-3: Finalization of Evaluation Procedure for CIE and SEE. (Annexure-B)

Resolved course evaluation procedure. The course shall carry 100 marks and shall be evaluated through continuous assessments during the semester for 30 sessional marks and end examination shall be for 70 marks. Day-to-day work in the class / laboratory shall be evaluated for 30 marks by the teacher concerned based on the regularity/assignments/viva/mid semester test. The end examination shall be conducted for 70 marks by the teacher concerned and an External expert.

Resolution-4: Ratification of Course Objectives and Course Outcomes, CO – PO Mapping for the Proposed Subjects. (Annexure-C)

Ratifies and Resolved the Course Objectives and Course Outcomes for the proposed subject (Soft Skills). Additionally, the CO-PO mapping was discussed and approved, ensuring alignment with the educational goals of the program.

- Resolved to make certain changes in the vocabulary of the Course Outcomes (COs).
- The Blooms Taxonomy levels have been restricted to K3 and K4 as directed by respected BoS members.
- Corrected the misspelt words.
- Both Lab internal and external assessment questions have been changed from theoretical to practical as suggested by BoS members.

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- Every Lab must have two faculty members (30 students per staff member).

Resolution-5: Finalization of Text Books and Reference Books. (Annexure-D)

Resolved the textbooks and reference books for the II B.Tech. II Semester Soft Skills course was reviewed. The following books were approved as the primary textbooks

Resolution-6: Any Other changes with the Permission of the Chairman

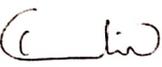
Resolved the additional changes made with the permission of the Chairman were discussed.

The chairman concluded the meeting by summarizing all the agenda points and resolutions and closed with a note of thanks to all members for their suggestions and participation.

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Members Present:

S. NO	Name(s) of the Member(s)/	Designation	Designation in Committee	Signature
1.	Dr. Sk Sadik	Professor & Head, Department of First Year Engineering, Sir C. R. Reddy College of Engineering, Eluru-534007 8096425444 sadikcrce@gmail.com	BoS- Chairman	
2.	Dr. G. Suvarna Lakshmi	Professor, EFLU, Hyderabad.	Member (University Nominee)	online
3.	Dr. Bh. V. N. Lakshmi	Professor & Head of Department English and Foreign Languages SRKR Engineering College, Bhimavaram drbhvnklakshmi@srkrec.ac.in 9440652526	Member (Subject Expert)	
4.	Dr. G. G. Ratnam	Professor & HOD Dept of BSH DNRCE ggratnam@gmail.com 9247848665	Member (Subject Expert)	
5.	Dr. Ravi Chandra Gooruganthu	Vice president (H.R) Tech Mahindra, Hyderabad.	Member (Industrial Expert)	-
6.	Sri Vashidhar Gedela.	Consultant, Data Base Engineer, Dell International Services, Hyderabad - (1990-94- CSE)	Member (College Alumni)	-
7.	Sri A. Srinivas	Assistant Professor, sircrcoe	Internal Member	
8.	Mrs. Devi Naga PrasannaB	Assistant Professor, sircrcoe	Internal Member	
9.	Sri. R. Pavan Kumar	Assistant Professor, sircrcoe	Internal Member	
10.	Mrs. Sushma Patnaik	Assistant Professor, sircrcoe	Internal Member	
11.	Mrs. K. Vijana	Assistant Professor, sircrcoe	Internal Member	
12.	Mrs. Santha Kumari	Assistant Professor, sircrcoe	Internal Member	
13.	Ms. B. Vihitha	Assistant Professor, sircrcoe	Internal Member	

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Signature of the BoS Chairman

(Dr. Sk.Sadik)

CC To

Mail and hard copy to: Honorable Chairman

Mail and hard copy to: Honorable Vice - Chairman

Mail and hard copy to: All BoS Members

Mail and hard copy to: PA to Principal

Mail and hard copy to: Director

Mail and hard copy to: Dean Academics

Mail copy to: HODS: ECEA and MECHANICAL

Mail and hard copy to: Exam Section/ Automation/Central Library/IQAC/AO

Mail to: All Faculty Members

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FIRST YEAR ENGINEERING DEPARTMENT

Year/Semester	II. B.Tech.-II Sem	L	T	P	C
Regulation Year	CR-24	0	1	2	2
Name of the Subject	SOFT SKILLS, CR24				
Branch	ME and ECE				

Course Objectives:

- To prepare the students to face global competition for employment and excellence in profession
- To help the students understand and build intrapersonal and interpersonal skills that will enable them to lead meaningful professional life.

Course Outcomes:

COs	Statements	Blooms Level
CO1	Assimilate and apply the soft skills and Learn how to develop them.	K3
CO2	Apply Soft Skills in the working environment for Professional excellence.	K3
CO3	Prepare the students to undergo the placement process with confidence and clarity.	K3
CO4	Tackle any situation in life and equip themselves to handle them effectively.	K4
CO5	Learn and apply the importance of etiquette in both professional and personal life.	K3

SOFT SKILLS SYLLABUS

UNIT-1: INTRODUCTION

Introduction- Emergence of life skills, Definition & Meaning, Importance & need, reasons for skill gap, Analysis--Soft Skills vs Hard skills, Linkage between industry and soft skills, Challenges, Personality Developments. Soft Skills, Soft Skills vs English - Improving Techniques.

UNIT-II: Intra-Personal:

Definition-Meaning – Importance-SWOT analysis, Johari windows - Goal Setting-quotient skills - Emotional Intelligence- Attitudinal skills - Right thinking- Problem Solving-Time management, stress management.



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UNIT-III: Inter-Personal:

Definition – Meaning – Importance-Communications skills-
Team Work, managerial skills-Negotiation skills-
Leadership skills, corporate etiquettes.

UNIT-IV: Verbal Skills:

Definition and Meaning-Listening skills, need- types,
advantages, Importance- Improving Tips for Listening,
Speaking, need- types, advantages, Importance- Improving
Tips, Reading- Writing Skills, Report, Resume, statement of
purpose, need- types, advantages, Importance-Improving
Tips.

UNIT-V: Non-Verbal Skills & Interview skills

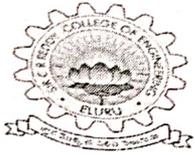
Definition and Meaning – Importance- Facial Expressions-
Eye Contact – Proxemics- Haptics -Posture, crosscultural
body language, body language in
interview room, appearance and dress code – Kinesthetics-
Para Language - tone, pitch, pause, neutralization of accent,
use of appropriate language, Interview skills, interview
methods and questions.

Text Books:

- 1) Sherfield, M. Robert at al, Cornerstone Developing Soft Skills,4/e,
Pearson Publication, New Delhi, 2014.
- 2) Alka Wadkar, Life Skills for Success,1/e, Sage Publications India Private
Limited,2016.

Reference Books:

1. Sambaiah M. Technical English, Wiley publishers India. NewDelhi.2014.
2. Gangadhar Joshi, From Campus to Corporate, SAGETEXT.
3. Alex. K, Soft Skills, 3rd ed. S. Chand Publication, NewDelhi,2014.
4. Meenakshi Raman and Sangita Sharma, Technical
Communication: Principle and Practice, Oxford University
Press, 2009.
5. Shalini Varma, Body Language for Your Success Mantra, 4/e, S.
Chand Publication, New Delhi, 2014.
6. Stephen Covey, Seven Habits of Highly Effective People, JMDBBook,2013.



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Online Learning Resources:

- https://onlinecourses.nptel.ac.in/noc20_hs60/preview
- <http://www.youtube.com/@softskillsdevelopment6210>
- https://youtube.com/playlist?list=PLLy_2iUCG87CQhELCytvXh0E_y-bOO1_q&si=Fs05Xh8ZrOPsR8F4
- <https://www.coursera.org/learn/people-soft-skills-assessment?language=English>
- <https://www.edx.org/learn/soft-skills>

1.

S. Saath

2.

3. Dr. V. N. Lakshmi

4

(C. S. S.)



SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

Dt: 29-04-2025

Circular

Sub: Sir C. R. Reddy College of Engineering, Eluru Department of First year Engineering (Mathematics) - Board of Studies meeting - Invitation - Reg.

We take the privilege to invite you for the Board of Studies meeting at Sir C. R. Reddy College of Engineering in the Department of First year Engineering (Mathematics), on 01-05-2025 (THURSDAY) at 09:30 A. M.

Agenda:

1. Introduction of members
2. To discuss and finalize the proposed II B. Tech. I & II Semester Mathematics courses of CR -24 Regulations.
3. Finalization of Model Paper and Proposed List of Paper Setters.
4. To finalize the Evaluation procedure for Continuous Internal Evaluation (CIE) and Semester End Evaluation (SEE).
5. Ratification of Course Objectives and Course Outcomes, CO-PO Mapping for the proposed subjects.
6. Finalization of Text Books and Reference Books.
7. Any other item with the permission of the chairman.

In this regard, all the members are requested to attend the online mode of Board of Studies meeting of Mathematics from the Department of First year Engineering on 01-05-2025 (Thursday) at 09:30 A. M. Kindly accept our invitation and make it convenient to attend the meeting.

Thanking you Sir/Madam,

Yours faithfully,

Dr. Shaik Sadik

HOD, Department of First year Engineering
Sir C. R. Reddy College of Engineering

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Date:28.04.2025

MEETING OF THE BOARD OF STUDIES IN DEPARTMENT OF FIRST YEAR ENGINEERING

To
Dr G.V. S.R. Deekshitulu
Professor,
Department of Mathematics ,
JNTUK college of Engineering, Kakinada..

Dear Sir/Mam,

**Sub: Sir C R Reddy College of Engineering – Department of First Year Engineering
(Mathematics) - Board of Studies Meeting - invitation – Reg.**

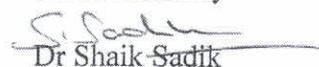
We take the privilege to invite you for Board of Studies meeting at Sir C R Reddy College of Engineering in the First Year Engineering Department (English), on 01-05-2025 at 9.30AM.

Agenda:

1. Introduction of BOS Members
2. To discuss and finalize the proposed II B Tech, I & II Semester Mathematics courses of CR-24
3. To approve the Model Question Papers
5. To approve the Text books and Reference books
6. To approve the list of Paper setters and evaluators
7. Ratification of Course Objectives and Course Outcomes, CO-PO mapping for the proposed subjects.
8. Any other item with the permission of the chairman

Thanking you sir,

Yours faithfully


Dr Shaik-Sadik

CHAIRMAN BOS IN
FIRST YEAR ENGINEERING
First Year Engineering Department
Sir C.R. Reddy College of Engineering,
ELURU-534 007



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Date:28.04.2025

MEETING OF THE BOARD OF STUDIES IN DEPARTMENT OF FIRST YEAR ENGINEERING

To
Dr. M.A.Srinivas,
Professor,
Department of Mathematics ,
JNTU College of Engineering, Hyderabad.

Dear Sir/Mam,

**Sub: Sir C R Reddy College of Engineering – Department of First Year Engineering
(Mathematics) - Board of Studies Meeting - invitation – Reg.**

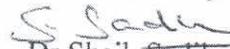
We take the privilege to invite you for Board of Studies meeting at Sir C R Reddy College of Engineering in the First Year Engineering Department (Mathematics), on 01-05-2025 at 9.30AM.

Agenda:

1. Introduction of BOS Members
2. To discuss and finalize the proposed II B Tech, I & II Semester Mathematics courses of CR-24
3. To approve the Model Question Papers
5. To approve the Text books and Reference books
6. To approve the list of Paper setters and evaluators
7. Ratification of Course Objectives and Course Outcomes, CO-PO mapping for the proposed subjects.
8. Any other item with the permission of the chairman

Thanking you sir,

Yours faithfully


Dr Shaik Sadik

CHAIRMAN BOS IN
FIRST YEAR ENGINEERING

Sir C.R. Reddy College of Engineering
ELURU-534 007

Estd. 1989



SIR C R REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

VATLURU, ELURU-534007, ELURU DIST., ANDHRA PRADESH, INDIA

Approved by AICTE, Accredited by NAAC with 'A' Grade & NBA,

Permanently Affiliated to JNTUK, KAKINADA

www.sircrrengg.ac.in, Phone Off: (08812) 230840, Email: principal.sircrrengg@gmail.com

Date:28.04.2025

MEETING OF THE BOARD OF STUDIES IN DEPARTMENT OF FIRST YEAR ENGINEERING

To
Dr GNV Kishore
Professor,
Department of Mathematics ,
SRKR Engineering college, Bhimavaram.

Dear Sir/Mam,

**Sub: Sir C R Reddy College of Engineering – Department of First Year Engineering
(Mathematics) - Board of Studies Meeting - invitation – Reg.**

We take the privilege to invite you for Board of Studies meeting at Sir C R Reddy College of Engineering in the First Year Engineering Department (Mathematics), on 01-05-2025 at 9.30AM.

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8. Any other item with the permission of the chairman

Thanking you sir,

Yours faithfully


Dr Shaik Sadik

CHAIRMAN BOS IN
FIRST YEAR ENGINEERING
1st Year Engineering Department
Sir C.R. Reddy College of Engineering
ELURU-534 007



SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

Minutes of the meeting of the Board of Studies of Mathematics, Department of First Year Engineering, held on 01-05-2025 at 09:30 A.M.

First Year Engineering Department of Sir C. R. Reddy College of Engineering has convened the BoS meeting of Engineering Mathematics through offline mode with the following points of agenda.

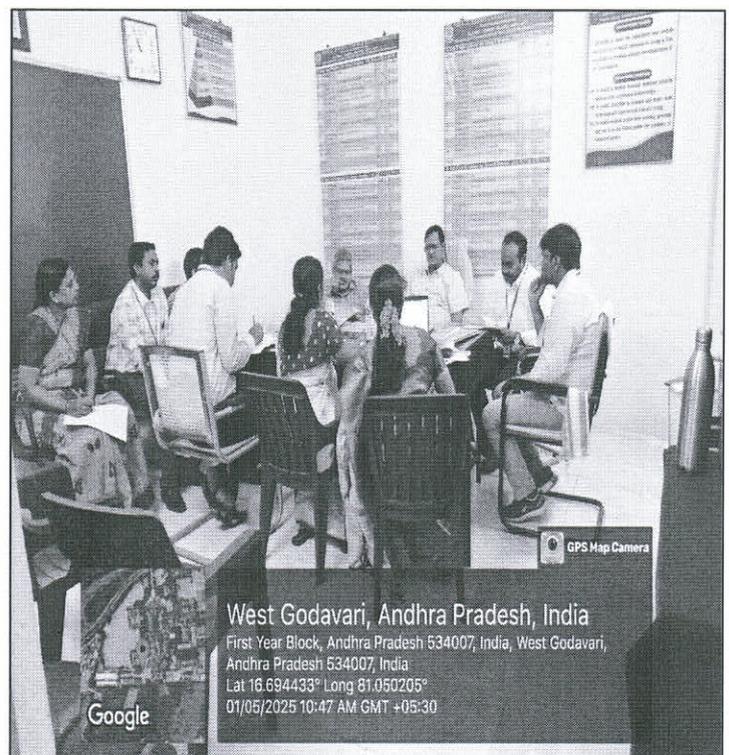
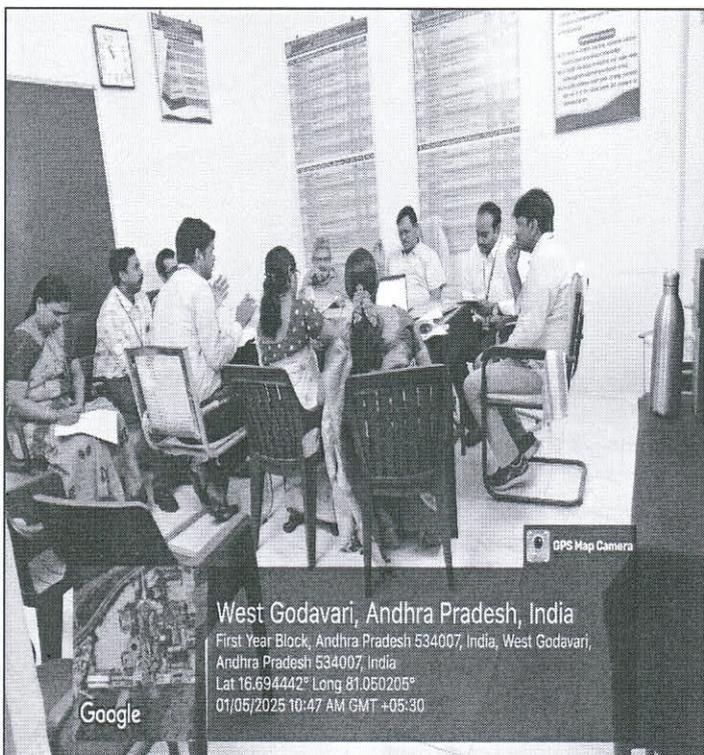
Venue: FED Office Room

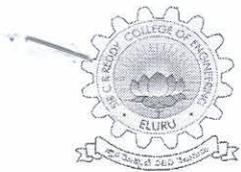
Meeting held on: 01-05-2025, 09:30 A.M.

Mode of conducting meeting: off-line

Agenda:

1. Introduction of members
2. To discuss and finalize the proposed II B. Tech. I & II Semester of CR-24 Regulations.
3. Finalization of Model Paper and List of Paper Setters.
4. To finalize the Evaluation procedure for Continuous Internal Evaluation (CIE) and Semester End Evaluation (SEE).
5. Ratification of Course Objectives and Course Outcomes, CO-PO Mapping for the proposed subjects.
6. Finalization of Text Books and Reference Books.
7. Any other item with the permission of the chairman.





SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

Resolutions:

At the outset, the principal of SIRCRRCOE presented his gratitude to the university nominee and other members of BoS and handed over the session to the chairman of BoS.

Resolutions-1: The BoS chairman welcomed and introduced the eminent BoS members to the meeting. He provided an overview of the course structure and pattern. The BoS members expressed their appreciation for the curriculum structure and course content. The chairman then presented the agenda for discussion by the members. The following deliberations were conducted according to the items on the agenda.

Resolutions-2: All the BoS members discussed in detail the proposed syllabus and suggested inclusions or modifications for the improvement of the syllabus. Also approved the syllabus of the Mathematics Papers offered to all second year, first and second semester of the B.Tech Programme.

Resolutions-3: The board suggested the following to implement:

1. First Year Engineering Department should be changed as Basic Sciences or Freshmen Engineering Department.
2. Only two mathematics courses for ECE is to be changed. The Board expressed descent for not offering sufficient number of credits to Mathematics subject.

AICTE Norms	For Basic Sciences	For Mathematics
	24 credits	12 credits

3. ECE students are not studying important subjects like Numerical Methods, Complex Variables, Transforms and etc., which is very objectionable. On these topics they get Questions in the competitive exams like GATE/ GRE etc.

1. S. Sankar

2. Chandrababu

3. A. Sankar

4. Sankar



SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

Members Present:

S. No.	Name(s) of the Member(s)	Designation	Position	Signature
1.	Dr. Shaik Sadik	Professor & Head, Department of First Year Engineering, Sir C. R. Reddy College of Engineering, Eluru- 534007 8096425444 sadikerrce@gmail.com	BoS-Chairman (The Chairman, Board of Studies, may with the approval of the principle of the college)	
2.	Dr. G. V. S.R. Deekshitulu	Professor, Department of Mathematics, JNTUK college of Engineering, Kakinada, Andhra Pradesh. 7799009970 dixitgvsr@gmail.com	One expert is to be nominated by the Vice-Chancellor from a panel of six recommended by the Autonomous College Principal	
3.	Dr. M. A. Srinivas	Professor, Department of Mathematics, JNTU College of Engineering, Hyderabad. 9490745460 massrinivas@jntuh.ac.in	Subject expert from outside the parent University are to be nominated by the Academic Council.	
4.	Dr. G.N.V. Kishore	Professor, Department of Mathematics, SRKR Engineering college, Bhimavaram.	Subject expert from outside the parent University are to be nominated by the Academic Council.	
5.	Dr. Ravi Chandra Gooruganthu	Vice president (H.R) Tech Mahindra, Hyderabad.	One representative from industry/corporate sector/allied areas to be nominated by the principal	—
6.	Sri Vashidhar Gedela.	Consaltant, Data Base Engineer, Dell International Services, Hyderabad - (1990-94- CSE)	One member of the College alumni to be nominated by the principal	—
7.	Dr. Swetha Lanka	Associate Professor, sircrcoe	Internal Members	
8.	Dr. G. Srinivas Rao	Associate Professor,		



SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU
DEPARTMENT OF FIRST YEAR ENGINEERING

		sircrrcoe		
9.	Sri Shake Baji	Assistant Professor, sircrrcoe	Internal Members	<i>S. Baji</i>
10.	Mrs. M. Durga Ratnam	Assistant Professor, sircrrcoe		<i>M. Durga Ratnam</i>
11.	Mrs. K. V. Umakaruna Devi	Assistant Professor, sircrrcoe		<i>K. V. Umakaruna Devi</i>
12.	Mrs. K. Madhavi	Assistant Professor, sircrrcoe		<i>K. Madhavi</i>
13.	Mrs. T. Anusha	Assistant Professor, sircrrcoe		—
14.	Ms. K. Kavyanjali	Assistant Professor, sircrrcoe		<i>K. Kavyanjali</i>
15.	Mrs. P. Naga Sriveni	Assistant Professor, sircrrcoe		<i>P. Naga Sriveni</i>
16.	Ms. K. Lalitha Parameswari	Assistant Professor, sircrrcoe		<i>Lalitha Parameswari</i>
17.	Mrs. S. Hemalatha	Assistant Professor, sircrrcoe		<i>S. Hemalatha</i>
18.	Ms. Akula Anumala	Assistant Professor, sircrrcoe		<i>A. Anumala</i>
19.	Mrs. P. Sai Priya	Assistant Professor, sircrrcoe	<i>P. Sai Priya</i>	


Signature of the BoS Chairman, Mathematics
(Dr. Shaik Sadik)

CC To

Mail & Hard copy to: Hon'ble Chairman

Mail & Hard copy to: Hon'ble Vice-Chairman

Mail & Hard copy to: All BoS Members

Mail & Hard copy to: PA to Principal

Mail & Hard copy to: Director

Mail & Hard copy to: Dean Academics

Mail copy to: HODs. CIVIL/MECH/EEE/ECE/CSE/IT/AIDS/AIML/CS

Mail to: Exam. Section/Automation/Central Library/IQAC/AO/



SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

CR 24 – B.Tech. II Year

MATHEMATICS COURSE STRUCTURE & SYLLABUS

Branch	Semester-I	Semester-II
Civil	Numerical Techniques And Statistical Methods	---
EEE	Complex Variables & Numerical Methods	---
Mechanical	Numerical Methods and Transform Techniques	Complex Variables, Probability and Statistics
CSE	Discrete Mathematics & Graph Theory	Probability and Statistics
CSE-AI&ML	Discrete Mathematics & Graph Theory	Probability and Statistics
CSE-AI&DS	Discrete Mathematics & Graph Theory	Statistical Methods for Data Science
CSE-CS	Discrete Mathematics & Graph Theory	Number Theory & Applications
IT	Discrete Mathematics & Graph Theory	Probability and Statistics



SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU
DEPARTMENT OF FIRST YEAR ENGINEERING

II Year-I Semester

L	T	P	C
3	0	0	3

NUMERICAL TECHNIQUES AND STATISTICAL METHODS
(For Civil Engineering)

COURSE OBJECTIVES:

The main objective of the course is to:	
1	To elucidate the different numerical methods to solve nonlinear algebraic equations
2	To disseminate the use of different numerical techniques for carrying out numerical integration.
3	To familiarize the students with the foundations of probability and statistical methods.
4	To equip the students to solve application problems in their disciplines.

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:		
CO1	Evaluate the approximate roots of polynomial and transcendental equations by different algorithms. Apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals	K3
CO2	Apply numerical integral techniques to different Engineering problems. Apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations	K3
CO3	Apply discrete and continuous probability distributions	K3
CO4	Design the components of a classical hypothesis test	K4
CO5	Infer the statistical inferential methods based on small and large sampling tests	K4



SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

UNIT – I: Iterative Methods:

Introduction – Solutions of algebraic and transcendental equations: Bisection method – Secant method – Method of false position – Iteration method – Newton-Raphson method (One variable and simultaneous Equations)

Interpolation: Newton's forward and backward formulae for interpolation – Interpolation with unequal intervals – Lagrange's interpolation formula

UNIT – II: Numerical integration, Solution of ordinary differential equations with initial conditions:

Trapezoidal rule– Simpson's $1/3^{\text{rd}}$ and $3/8^{\text{th}}$ rule– Solution of initial value problems by Taylor's series– Picard's method of successive approximations– Euler's method –Runge- Kutta method (second and fourth order) – Milne's Predictor and Corrector Method.

UNIT – III: Probability and Distributions:

Baye's theorem – Random variables – Discrete and Continuous random variables – Distribution functions – Probability mass function, Probability density function and Cumulative distribution functions – Mean and Variance, Discrete Distributions – Binomial, Poisson, Continuous Distributions-Uniform and Normal distributions.

UNIT – IV: Sampling Theory:

Introduction – Population and Samples – Sampling distribution of Means and Variance (definition only) — Maximum likelihood estimate, Maximum error of estimate – Central limit theorem (without proof), Point and Interval estimations , Hypothesis – Null and Alternative Hypothesis – Type I and Type II errors – Level of significance– One tail and two-tail tests – Test of significance for large samples and Small Samples: Single and difference means – Single and two proportions ,Ratio of Variances

UNIT V: Correlation and Regression

Correlation: Correlation Coefficient, Rank Correlation. Linear Regression: Straight Line, Regression Coefficients and Properties. Curve Fitting: Principle of least squares, Fitting of straight line, Parabolic curves and Exponential curves.



SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

TEXT BOOKS:

1. **B. S. Grewal**, Higher Engineering Mathematics, 44th Edition, Khanna Publishers.
2. **Miller and Freund's**, Probability and Statistics for Engineers, 7/e, Pearson, 2008.

REFERENCES:

1. **Steven C. Chapra**, Applied Numerical Methods with MATLAB for Engineering and Science, Tata Mc. Graw Hill Education.
2. **M. K. Jain, S.R.K. Iyengar and R.K. Jain**, Numerical Methods for Scientific and Engineering Computation, New Age International Publications.
3. **Lawrence Turyn**, Advanced Engineering Mathematics, CRC Press.
4. **S. C. Gupta and V.K. Kapoor**, Fundamentals of Mathematical Statistics, 11/e, Sultan Chand & Sons Publications, 2012.
5. **Shron L. Myers, Keying Ye, Ronald E Walpole**, Probability and Statistics Engineers and the Scientists, 8th Edition, Pearson 2007.
6. **Jay I. Devore**, Probability and Statistics for Engineering and the Sciences, 8th Edition, Cengage.

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SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

II Year-I Semester

L	T	P	C
3	0	0	3

COMPLEX VARIABLES & NUMERICAL METHODS (EEE Branch)

COURSE OBJECTIVES:

The main objective of the course is to:	
1	To elucidate the different numerical methods to solve nonlinear algebraic equations
2	To disseminate the use of different numerical techniques for carrying out numerical integration.
3	To familiarize the complex variables
4	To equip the students to solve application problems in their disciplines

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:		
CO1	Evaluate the approximate roots of polynomial and transcendental equations by different algorithms. Apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals.	K3
CO2	Apply numerical integral techniques to different Engineering problems. Apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations.	K3
CO3	Apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic	K3
CO4	Evaluate the Taylor and Laurent expansions of simple functions, determining the nature of the singularities and calculating residues. Make use of the Cauchy residue theorem to evaluate certain integrals	K3

UNIT-I: Iterative Methods:

Introduction – Solutions of algebraic and transcendental equations: Bisection method – Secant method – Method of false position – General Iteration method – Newton-Raphson method (Simultaneous Equations)

Interpolation: Newton's forward and backward formulae for interpolation – Interpolation with unequal intervals – Lagrange's interpolation formula



SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

UNIT-II: Numerical integration, Solution of ordinary differential equations with initial conditions:

Trapezoidal rule– Simpson's $1/3^{\text{rd}}$ and $3/8^{\text{th}}$ rule– Solution of initial value problems by Taylor's series– Picard's method of successive approximations– Euler's method –Runge- Kutta method (second and fourth order) – Milne's Predictor and Corrector Method.

UNIT-III: Functions of a complex variable and Complex integration:

Introduction – Continuity – Differentiability – Analyticity –Cauchy-Riemann equations in Cartesian and polar coordinates – Harmonic and conjugate harmonic functions – Milne – Thompson method.

Complex integration: Line integral – Cauchy's integral theorem – Cauchy's integral formula – Generalized integral formula (all without proofs) and problems on above theorems.

UNIT-IV: Series expansions and Residue Theorem:

Radius of convergence –Expansion of function in Taylor's series, Maclaurin's series and Laurent series.

Types of Singularities: Isolated – Essential singularities –Pole of order m – Residues – Residue Theorem (without proof) – Evaluation of real integral of the types $\int_{-\infty}^{\infty} f(x)dx$ ($f(z)$ not having poles on real axis) and $\int_c^{c+2\pi} f(\cos \theta, \sin \theta)d\theta$

UNIT-V: Conformal mapping:

Transformation by e^z , $\ln z$, z^n (n positive integer), $z + a/z$. Translation, rotation, inversion and bilinear transformation – fixed point – cross ratio – properties –invariance of circles and cross ratio.

Text Books:

1. **B. S. Grewal**, Higher Engineering Mathematics, 44th Edition, Khanna Publishers

2. **Micheael Greenberg**, Advanced Engineering Mathematics, 2ndedition, Pearson edition.

Reference Books:

1. **Erwin Kreyszig**, Advanced Engineering Mathematics, 10th Edition, Wiley-India.



SIR C R REDDY COLLEGE OF ENGINEERING (A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

2. **B. V. Ramana**, Higher Engineering Mathematics, 2007 Edition, Tata Mc. Graw Hill Education.
3. **Steven C. Chapra**, Applied Numerical Methods with M A T L A B for Engineering and Science, Tata Mc. Graw Hill Education.
4. **M. K. Jain, S. R. K. Iyengar and R. K. Jain**, Numerical Methods for Scientific and Engineering Computation, New Age International Publications.
5. **J. W. Brown and R. V. Churchill**, Complex Variables and Applications, 9th edition, Mc- Graw Hill, 20

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SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

II Year-I Semester

L	T	P	C
3	0	0	3

NUMERICAL METHODS AND TRANSFORM TECHNIQUES (Mechanical Branch)

COURSE OBJECTIVES:

The main objective of the course is to:	
1	To elucidate the different numerical methods to solve nonlinear algebraic equations
2	To disseminate the use of different numerical techniques for carrying out numerical integration.
3	To furnish the learners with basic concepts and techniques at plus two level to lead them into advanced level by handling various real-world applications

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:		
CO1	Evaluate the approximate roots of polynomial and transcendental equations by different algorithms. Apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals	K4
CO2	Apply numerical integral techniques to different Engineering problems. Apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations	K4
CO3	Apply the Laplace transform for solving differential equations	K4
CO4	Find or compute the Fourier series of periodic signals	K2
CO5	Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms	K2



SIR C R REDDY COLLEGE OF ENGINEERING (A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

UNIT – I: Iterative Methods:

Introduction – Solutions of algebraic and transcendental equations: Bisection method – Secant method – Method of false position – Iteration method – Newton-Raphson method (Simultaneous Equations) Interpolation: Newton's forward and backward formulae for interpolation – Interpolation with unequal intervals – Lagrange's interpolation formula.

UNIT – II: Numerical integration, Solution of ordinary differential equations with initial conditions:

Trapezoidal rule– Simpson's 1/3rd and 3/8th rule– Solution of initial value problems by Taylor's series– Picard's method of successive approximations– Euler's method – Runge Kutta method (second and fourth order) – Milne's Predictor and Corrector Method.

UNIT –III: Laplace Transforms:

Definition of Laplace transform - Laplace transforms of standard functions – Properties of Laplace Transforms – Shifting theorems–Transforms of derivatives and integrals – Unit step function – Dirac's delta function – Inverse Laplace transforms – Convolution theorem (with out proof). Applications: Solving ordinary differential equations (initial value problems) with constant coefficients using Laplace transforms.

UNIT – IV: Fourier series:

Introduction– Periodic functions – Fourier series of periodic function –Dirichlet's conditions – Even and odd functions –Change of interval– Half-range sine and cosine series.

UNIT – V: Fourier Transforms:

Fourier integral theorem (without proof) – Fourier sine and cosine integrals – Infinite Fourier transforms – sine and cosine transforms – Properties– Inverse transforms – Convolution theorem (without proof) – Finite Fourier transforms.



SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

Text Books:

1. **B. S. Grewal**, Higher Engineering Mathematics, 44th Edition, Khanna Publishers.
2. **M. K. Jain, S.R.K. Iyengar and R.K. Jain**, Numerical Methods for Scientific and Engineering Computation, New Age International Publications.

Reference Books:

1. **Erwin Kreyszig**, Advanced Engineering Mathematics, 10th Edition, Wiley-India.
2. **Steven C. Chapra**, Applied Numerical Methods with MATLAB for Engineering and Science, Tata Mc. Graw Hill Education.
3. **B. V. Ramana**, Higher Engineering Mathematics, 2007 Edition, Tata Mc. Graw Hill Education
4. **Lawrence Turyn**, Advanced Engineering Mathematics, CRC Press.

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SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

II Year-I Semester

L	T	P	C
3	0	0	3

DISCRETE MATHEMATICS AND GRAPH THEORY (Common to CSE, CSE-AIDS, CSE-AIML, CSE-CS, and IT)

COURSE OBJECTIVES:

The main objective of the course is to:

1	To introduce the students to the topics and techniques of discrete methods and combinatorial reasoning.
2	To introduce a wide variety of applications. The algorithmic approach to the solution of problems is fundamental in discrete mathematics, and this approach reinforces the close ties between this discipline and the area of computer science.

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:

CO1	Build skills in solving mathematical problems.	K3
CO2	Comprehend mathematical principles and logic.	K4
CO3	Demonstrate knowledge of mathematical modeling and proficiency in using mathematical software.	K6
CO4	Manipulate and analyze data numerically and/or graphically using appropriate Software.	K3
CO5	How to communicate effectively mathematical ideas/results verbally or in writing	K1

UNIT-I: Mathematical Logic-1

Propositional Calculus: Statements and Notations, Connectives, Well Formed Formulas, Truth Tables, Tautologies, Equivalence of Formulas, Duality Law, Tautological Implications, Normal Forms- Disjunctive Normal Form, Conjunctive Normal Form, Principal Disjunctive Normal Form, Principal Conjunctive Normal Form, Ordering and Uniqueness of Normal Forms.

UNIT-II: Predicate Calculus

Theory of Inference for Statement Calculus, Consistency of Premises, Indirect Method of Proof, Predicate Calculus: Predicates, Predicative Logic, Statement Functions, Variables and Quantifiers, Free and Bound Variables, Inference Theory for Predicate Calculus

Sets: Operations on Sets, Principle of Inclusion-Exclusion, Relations: Properties, Operations, Partition and Covering, Transitive Closure, Equivalence, Compatibility and Partial Ordering, Hasse Diagrams.



SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

UNIT-III: Functions and Recurrence Relations

Functions: Bijective, Composition, Inverse, Permutation, and Recursive Functions, Lattice and its Properties.

Recurrence Relations

Generating Functions, Function of Sequences, Partial Fractions, Calculating Coefficient of Generating Functions, Recurrence Relations, Formulation as Recurrence Relations, Solving Recurrence Relations by Substitution and Generating Functions, Method of Characteristic Roots, Solving Inhomogeneous Recurrence Relation

UNIT-IV: Graph Theory

Basic Concepts, Graphs, Subgraphs, Graph Representations: Adjacency and Incidence Matrices, Isomorphic Graphs, Paths and Circuits, Eulerian and Hamiltonian Graphs.

Unit-V: Multi Graphs

Multigraphs, Bipartite and Planar Graphs, Euler's Theorem, Graph Coloring and Covering, Chromatic Number, Trees and It's Properties, Spanning Trees, Prim's and Kruskal's Algorithms, Breadth-First Search(B F S) and Depth- First Search (D F S).

TEXT BOOKS:

1. Discrete Mathematical Structures with Applications to Computer Science, J. P. Trembly and P. Manohar, Tata Mc Graw Hill.
2. Elements of Discrete Mathematics–A Computer Oriented Approach, C. L. Liu and D. P. Mohapatra, 3rd Edition, Tata Mc Graw Hill.
3. Theory and Problems of Discrete Mathematics, Schaum's Outline Series, Seymour Lipschutz and Marc Lars Lipson, 3rd Edition, Mc Graw Hill.

REFERENCE BOOKS:

1. Discrete Mathematics for Computer Scientists and Mathematicians, J. L. Mott, A. Kandel and T. P. Baker, 2nd Edition, Prentice Hall of India.
2. Discrete Mathematical Structures, Bernard Kolman, Robert C. Busby and Sharon Cutler Ross, P H I.
3. Discrete Mathematics, S. K. Chakraborty and B. K. Sarkar, Oxford, 2011.
4. Discrete Mathematics and its Applications with Combinatorics and Graph Theory, K.
5. H. Rosen, 7th Edition, Tata Mc Graw Hill.

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SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU
DEPARTMENT OF FIRST YEAR ENGINEERING

II Year–II Semester

L	T	P	C
3	0	0	3

COMPLEX VARIABLES, PROBABILITY AND STATISTICS
(For Mechanical Engineering)

COURSE OBJECTIVES:

The main objective of the course is to:	
1	To familiarize the complex variables.
2	To familiarize the students with the foundations of probability and statistical methods.
3	To equip the students to solve application problems in their disciplines.

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:		
CO1	Apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic.	K3
CO2	Apply Make use of the Cauchy residue theorem to evaluate certain Integrals.	K3
CO3	Apply discrete and continuous probability distributions.	K3
CO4	Analyze Infer the statistical inferential methods based on small and large sampling tests.	K4
CO5	Design the components of a classical hypothesis tests.	K4

UNIT I: Functions of a complex variable and Complex integration:

Introduction–Continuity –Differentiability–Analyticity –Cauchy-Riemann equations in Cartesian and polar coordinates–Harmonic and conjugate harmonic functions– Milne–Thompson method. Complex integration: Line integral –Cauchy’s integral theorem –Cauchy’s integral formula– Generalized integral formula (all without proofs) and problems on above theorems



SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

UNIT II: Series expansions and Residue Theorem:

Radius of convergence–Expansion in Taylor’s series, Maclaurin’s series and Laurent series.
Types of Singularities: Isolated – Essential – Pole of order m – Residues – Residue theorem
(without proof) – Evaluation of real integral of the type’s $\int_{-\infty}^{\infty} f(x) dx$ ($f(z)$ not having poles on
real axis) and $\int_c^{c+2\pi} f(\cos x, \sin x) dx$

UNIT III: Probability & Distributions:

Probability – Conditional probability and Baye’s theorem – Random variables – Discrete and
Continuous random variables – Distribution Functions-Probability mass functions Probability
density function and cumulative distribution functions- Discrete distributions: Mean and
variance-Binomial, Poisson, Continuous Distribution: Uniform and Normal distributions.

UNIT IV: Sampling Theory:

Introduction – Population and samples – Sampling distribution of Means and Variance-
Maximum likelihood estimate-Point and Interval estimations - Maximum error of estimate-
Central limit theorem (without proof)- Estimation using t , chi-square and F -distributions.

UNIT V: Tests of Hypothesis:

Introduction – Testing of Hypothesis – Null and Alternative Hypothesis – Type I and Type II
errors – Level of significance – One tail and two-tail tests – Tests concerning one mean and two
means (Large and Small samples)–Tests on proportions, ratio of variance.



SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU
DEPARTMENT OF FIRST YEAR ENGINEERING

TEXT BOOKS:

1. **B.S. Grewal**, Higher Engineering Mathematics, 44/e, Khanna Publishers.
2. **Miller and Freund's**, Probability and Statistics for Engineers, 7/e, Pearson, 2008.

REFERENCES:

1. **J. W. Brown and R. V. Churchill**, Complex Variables and Applications, 9/e, Mc-Graw Hill, 2013.
2. **S. C. Gupta and V.K. Kapoor**, Fundamentals of Mathematical Statistics, 11/e, Sultan Chand & Sons Publications, 2012.
3. **Jay I. Devore**, Probability and Statistics for Engineering and the Sciences, 8/e, Cengage.
4. **Shron L. Myers, Keying Ye, Ronald E Walpole**, Probability and Statistics Engineers and the Scientists, 8/e, Pearson 2007.
5. **Sheldon, M. Ross**, Introduction to probability and statistics Engineers and the Scientists, 4/e, Academic Foundation, 2011.

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SIR C R REDDY COLLEGE OF ENGINEERING (A), ELURU

DEPARTMENT OF FIRST YEAR ENGINEERING

II Year-II Semester

L	T	P	C
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PROBABILITY AND STATISTICS (Common to CSE, CSE-AIML & IT)

COURSE OBJECTIVES:

The main objective of the course is to:	
1	To familiarize the students with the foundations of probability and statistical methods.
2	To impart probability concepts and statistical methods in various applications Engineering.

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:		
CO1	Classify the concepts of data science and its importance	K2
CO2	Interpret the association of characteristics and through correlation and regression tools	K4
CO3	Apply discrete and continuous probability distributions.	K3
CO4	Design the components of a classical hypothesis test	K3
CO5	Infer the statistical inferential methods based on small and large sampling tests.	K4



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UNIT I: Descriptive Statistics and Methods for Data Science

Statistics Introduction, Population vs Sample, Collection of Data –types of data – Primary and Secondary Data, Types of Variables: Dependent and Independent, Measures of Central Tendency, Measures of Variability, Skewness(absolute measures) and Kurtosis.

UNIT II: Correlation and Regression

Correlation: Correlation Coefficient, Rank Correlation. Linear Regression: Straight Line, Regression Coefficients and Properties. Curve Fitting: Principle of least squares, Fitting of straight line, Parabolic curves and Exponential curves.

UNIT III: Probability & Distributions

Probability, Conditional Probability and Bayes' Theorem, Random Variables – Discrete and Continuous Random Variables, Distribution Functions: Probability Mass Function (PMF), Probability Density Function (PDF), Cumulative Distribution Function (CDF), Mathematical Expectation and Variance, Binomial, Poisson, Uniform, and Normal Distributions.

UNIT IV: Sampling Theory

Introduction – Population and Samples – Sampling distribution of Means and Variance — Maximum likelihood estimate, Maximum error of estimate – Central limit theorem (without proof), Point and Interval estimations, Estimation using t, Chi-square, and F-distributions.

UNIT V: Tests of Hypothesis

Introduction, Hypothesis – Null and Alternative Hypothesis, Type I and Type II Errors, Level of Significance – One-tail and Two-tail Tests, Test of Significance for Large and Small Samples: Single and Difference of Means, Single and Two Proportions, Ratio of Variance.

TEXT BOOKS

1. **Miller and Friends**, *Probability and Statistics for Engineers*, 7th Edition, Pearson, 2008.
2. **S.C. Gupta and V.K. Kapoor**, *Fundamentals of Mathematical Statistics*, 11th Edition, Sultan Chand & Sons Publications, 2012.



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DEPARTMENT OF FIRST YEAR ENGINEERING

REFERENCES

1. **Shron L. Myers, Keying Ye, Ronald E. Walpole**, *Probability and Statistics for Engineers and Scientists*, 8th Edition, Pearson, 2007.
2. **Jay L. Devore**, *Probability and Statistics for Engineering and the Sciences*, 8th Edition, Cengage.
3. **Sheldon M. Ross**, *Introduction to Probability and Statistics for Engineers and Scientists*, 4th Edition, Academic Foundation, 2011.
4. **Johannes Ledolter and Robert V. Hogg**, *Applied Statistics for Engineers and Physical Scientists*, 3rd Edition, Pearson, 2010.

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II Year–II Semester

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STATISTICAL METHODS FOR DATA SCIENCE (For CSE-AIDS)

COURSE OBJECTIVES:

The main objective of the course is to:	
1	Providing knowledge on basic concepts of Statistics, Estimation and testing of hypotheses for large and small samples.

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:		
CO1	Analyze data and draw conclusion about collection of data and fitting of distributions	K4
CO2	Analyzing the testing of hypothesis for large and small samples.	K4
CO3	Develop skills in problem solving of the regression analysis	K4
CO4	Understanding the significance of Time Series data in various fields	K2
CO5	Understanding the classification using Logistic Regression	K2

UNIT I: Data Visualization and Distributions

Data Visualization Techniques: Introduction to statistical methods, exploratory data analysis, charts (line, pie, bar), plots (bubble, scatter), maps (heat, dot distribution), diagrams (trees and matrices), principal components analysis.

Introduction to Data Distributions: Probability distributions – discrete (binomial, Poisson) and continuous distributions (normal, exponential).



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UNIT II: Hypothesis Testing

Introduction to parametric estimation, parametric confidence intervals, choosing a statistic, hypothesis testing, parametric test (T-test), applications to hypothesis tests, pairwise comparisons.

UNIT III: Linear Regression and Multiple Regression

Regression: Linear regression, curvilinear regression (exponential regression, polynomial regression, power model). The nature of the relationship, multiple linear regression, important measurements of the regression estimate, multiple regression with categorical explanatory variables, inference in multiple regression, variable selection.

UNIT IV: Time Series

Time Series Analysis: Significance of time series analysis, components of time series. Secular Trend Methods: Graphic method, semi-average method, method of moving averages, method of least squares (straight line and non-linear trends), logarithmic methods, exponential trends, growth curves.

Seasonal Variations: Method of simple averages, ratio-to-trend method, ratio-to-moving average method, link relative method.

UNIT V: Logistic Regression

The classification problem, logistic regression setup, interpreting the results, comparing models, classification using logistic regression.

TEXT BOOKS:

1. **Elizabeth Purdom**, *Statistical Methods for Data Science*.
2. **Chris Chatfield**, *The Analysis of Time Series: An Introduction*, 5th Edition, Chapman & Hall/CRC.
3. **Peter J. Brockwell, Richard A. Davis**, *Introduction to Time Series and Forecasting*, 2nd Edition, Springer.



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REFERENCE BOOKS:

1. **Manoj Kumar Srivastava and Namita Srivastava**, *Statistical Inference – Testing of Hypotheses*, Prentice Hall of India, 2014.
2. **Robert V. Hogg, Elliot A. Tannis, and Dale L. Zimmerman**, *Probability and Statistical Inference*, 9th Edition, Pearson Publishers, 2013.
3. **Chris Chatfield**, *The Analysis of Time Series: An Introduction*, 5th Edition, Chapman & Hall/CRC.
4. **Peter J. Brockwell, Richard A. Davis**, *Introduction to Time Series and Forecasting*, 2nd Edition, Springer.

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SIR C R REDDY COLLEGE OF ENGINEERING(A), ELURU
DEPARTMENT OF FIRST YEAR ENGINEERING

II Year–II Semester

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NUMBER THEORY AND ITS APPLICATIONS
(CSE-CS)

COURSE OBJECTIVES:

This course enables the students to learn the concepts of number theory and its applications to information security.

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:		
CO1	Apply the knowledge of GCD and Prime Factorization.	K3
CO2	Understand principles on congruence	K2
CO3	Develop the knowledge of congruence applications	K3
CO4	Understand the finite fields and primality	K2
CO5	Develop various encryption methods and its applications.	K3



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DEPARTMENT OF FIRST YEAR ENGINEERING

UNIT – I: Integers, Greatest common divisors and prime Factorization

The well-ordering property- Divisibility-Representation of integers- Computer operations with integers-Prime numbers - Greatest common divisors-The Euclidean algorithm -The fundamental theorem of arithmetic-Factorization of integers and the Fermat numbers - Linear Diophantine equations.

UNIT – II: Congruence:

Introduction to congruence -Linear congruence-The Chinese remainder theorem- Systems of linear congruence.

UNIT – III: Applications of Congruence:

Divisibility tests-The perpetual calendar-Round-robin tournaments-Computer file storage and hashing functions. Wilson's theorem and Fermat's little theorem- Pseudo primes- Euler's theorem- Euler's phi-function- The sum and number of divisors- Perfect numbers and Mersenne primes.

UNIT – IV: Finite fields & Primality, factoring

Finite fields-quadratic residues and reciprocity-Pseudo primes-rho method - Fermat factorization and factor bases.

UNIT – V: Cryptology

Basic terminology-complexity theorem-Character ciphers - Block ciphers - Exponentiation ciphers- Public-key cryptography-Discrete logarithm - Knapsack ciphers- RSA algorithm.

Text Books:

1. Elementary number theory and its applications, **Kenneth H Rosen**, AT & T Information systems & Bell laboratories.
2. A course in Number theory & Cryptography, **Neal Koblitz**, Springer.



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References Books:

1. An Introduction to The Theory of Numbers, **Herbert S. Zuckerman, Hugh L. Montgomery, Ivan Niven**, wiley publishers
2. Introduction to Analytic number theory-**Tom M Apostol**, springer
3. Elementary number theory, VK Krishnan, Universities press

1. S. Balu

2. Chakravarti

3. MAK

4. MAK

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