



Walchand Institute of Technology, Solapur  
(An Autonomous Institute)

Affiliated to  
Punyashlok Ahilyadevi Holkar Solapur University,  
Solapur

Choice Based Credit System (CBCS)

Structure and Syllabus  
for

Open Elective-I

Offered for All UG Programs

By Department of Electronics Engineering

*Mamoli*

Dean Academics

W.E.F. 2025-26

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# Department of Electronics Engineering

## Vision

- To be a distinguished centre for nurturing the holistic development of competent young engineers in the Electronics and Information Technology fields.

## Mission

- **M1:** To inculcate and stimulate Electronics & Computer proficiency amongst students through quality education and innovative educational practices.
- **M2:** To create engineering professionals with social consciousness
- **M3:** To foster technical skills of students through creativity and critical thinking
- **M4:** To enhance soft skills et of students which is crucial for career success through effectual training



## Open Elective-I for All UG Programs

Semester	Course Code	Name of Course	Engagement Hours			Credits					Total
			L	T	P		Theory	OE/ POE	ISE	ICA	
<b>III</b>	24GEU3ON*4T	Open Elective I	2	-	-	2	60	-	40	-	100
<b>III</b>	24GEU3ON*4A	Open Elective I	-	1	-	1	-	-	-	25	25
		<b>Total</b>	<b>2</b>	<b>1</b>	<b>-</b>	<b>3</b>	<b>60</b>	<b>-</b>	<b>40</b>	<b>25</b>	<b>125</b>

*N\* indicated serial Number open elective course*

### Open Elective I

Sr. No.	Subject Code	Subject
1	24GEU3O14T	Higher Engineering Mathematics
2	24GEU3O24T	Advanced Engineering Mathematics
3	24GEU3O34T	Applied Mathematics
4	24GEU3O44T	Statistics and Fuzzy logic
5	24GEU3O54T	Applied Statistics





# WALCHAND INSTITUTE OF TECHNOLOGY, SOLAPUR

(An Autonomous Institute)

Second. Year. B.Tech Semester-III

## OPEN ELECTIVE-I (Offered by Department of Electronics Engineering) 24GEU3O54T: APPLIED STATISTICS

Teaching Scheme		Examination Scheme	
Lectures	2 Hours/week	ESE	60 Marks
Tutorial	1 Hours/week	ISE	40 Marks
Credits	3	ICA	25 Marks

### Introduction:

This course focuses on the applied statistics tailored for undergraduate students in Engineering without diving deep into mathematical part. It covers probability theory, statistical methods, and their applications in engineering. It also introduces Fourier transform required for transforming non-periodic continuous signals from time domain to frequency domain.

### Course Prerequisite:

Elementary mathematics, Basics of statistics and probability, Integration

### Course Objectives:

1. To make students aware about the basic concept of probability.
2. To introduce to students various types of probability distributions with focus on engineering applications.
3. To introduce to students methods of statistical and graphical summaries of data.
4. To introduce to students fundamental methods of correlation and regression.
5. To make student aware about Fourier transform and it's significance.

### Course Outcomes:

After completing this course, student will be able to –

1. Solve numerical examples based on probability.
2. Solve numerical examples based on probability distributions.
3. Solve numerical examples based on descriptive statistics.
4. Solve numerical examples based on correlation and regression.
5. Apply the concept of Fourier transform to solve complex engineering problems.

Unit – I	Outcomes, Events and Probability	06 Hours
Sample spaces and events, counting techniques, interpretations and axioms of probability, unions of events and addition rules, conditional probability, intersections of events and multiplication and total probability rules, independence, Bayes' theorem.		



<b>Unit – II</b>	<b>Probability Distributions</b>	<b>06 Hours</b>
Random variable, discrete and continuous random variables, probability density functions. Advanced Probability Distributions: Hyper-geometric distribution, Exponential distribution, Gamma distribution.		
<b>Unit – III</b>	<b>Descriptive Statistics</b>	<b>06 Hours</b>
Numerical summaries of data - measures of central tendency, spread and variability, frequency distributions and histograms, box-and-whisker plot, time sequence plots, scatter diagrams, probability plots.		
<b>Unit – IV</b>	<b>Correlation and Regression</b>	<b>06 Hours</b>
Coefficient of correlation, regression for Bi-variate data, simple linear regression, multiple linear regression, assessing the regression model.		
<b>Unit – V</b>	<b>Fourier Transform</b>	<b>06 Hours</b>
Fourier transform, Fourier sine transform, Fourier cosine transform and their inverses. Examples on Fourier transforms.		
<p><b>Internal Continuous Assessment (ICA):</b>  Internal Continuous Assessment (ICA) shall have minimum five assignments covering the entire syllabus of the course.  Continuous Assessment of this course focuses on problem solving practice sessions which has the following topics to be covered in tutorial sessions.</p> <ol style="list-style-type: none"> <li>1. Basic concepts of theory of probability</li> <li>2. Bayes theorem and applications</li> <li>3. Random variables and their probability density functions</li> <li>4. Mathematical expectation and variance of the random variables</li> <li>5. Hyper geometric distribution and applications</li> <li>6. Exponential and Gamma distributions</li> <li>7. Measures of central tendency</li> <li>8. Measures of dispersion and coefficient of variation</li> <li>9. Correlation coefficient between two variables.</li> <li>10. Simple Linear Regression</li> <li>11. Fourier transforms and Inverse Fourier transforms</li> <li>12. Fourier sine and cosine transforms and their inverse transforms.</li> </ol>		



## Text Books

1. Applied Statistics and Probability for Engineers, Douglas C. Montgomery, George C. Runger, Wiley
2. A Modern Introduction to Probability and Statistics: Understanding Why and How, F.M. Dekking C. Kraaikamp, H.P. Lopuhaa L.E. Meester, Springer
3. Practical Statistics for Data Scientists, Peter Bruce, Andrew Bruce, Peter Gedeck, O'Reilly
4. Higher Engineering Mathematics, Ramana B.V. Tata McGraw Hill
5. Higher Engineering Mathematics, H.K Dass, S. Chand Publisher

