Semester	Code	Module Title	Credits	C/E/O	GPA/NGPA
7,8	MA4090	Mathematical Statistics	3	E	GPA

Hours/Week		Pre-requisites/Co-requisites	Evaluation (%)	
Lecture	Tute/Lab		CA	WE
3	0	MA1024	30	70

Learning Outcomes

After the successful completion of this course students should be able to
- Understand the mathematical properties of statistical methods
- Understand different methods of estimation in statistics
- Determine the potential of hypothesis tests

Syllabus Outline

- **Properties of estimators:** Mean-squared error, Unbiasedness, Consistency, Sufficiency, Completeness, Efficiency; Factorization criterion.
- **Variance Reduction**: Cramer-Rao Lower Bound, Rao-Blackwell Theorem, Lehmann-Scheffe' Theorem
- **Methods of Estimation**: Method of moments, Maximum Likelihood and its Properties; Interval Estimation: Pivotal Method, General Method.
- **Theory of Hypothesis Testing**: Errors, Power, Neymann-Pearson Lemma, Most Powerful Tests, Uniformly Most Powerful Tests, sample size calculation