

<b>DEPARTMENT: MATHEMATICS</b>	<b>COURSE TITLE: INTRODUCTION TO STATISTICS I (CHANGE NAME FROM MATH MODELING)</b> <b>COURSE NUMBER: 332</b>
<b>GRADE(S): 11, 12</b>	<b>PRE-REQUISITES : C- OR BETTER IN ALGEBRA II OR IMP 3</b>

<b>UNIT</b>	<b>LENGTH</b>	<b>CONTENT</b>	<b>SKILLS</b>	<b>METHODS OF ASSESSMENT</b>	<b>FRAMEWORK STRAND(S) &amp; STANDARD(S)</b>
Measurement Variation and Natural Variation	2 weeks	<ul style="list-style-type: none"> <li>Different types of variation in real situations</li> <li>Combinatoric basis for making the assumption of a normal distribution model</li> </ul>	<ul style="list-style-type: none"> <li>Represent univariate data graphically through frequency bar graphs (histograms)</li> </ul>	<ul style="list-style-type: none"> <li>Homework</li> <li>Classwork</li> <li>Projects</li> <li>Portfolio</li> </ul>	S-ID 1
Standard Deviation and Normal Distributions	2 weeks	<ul style="list-style-type: none"> <li>Connect graphical representation of normal distributions to the parameters of mean and standard deviation</li> <li>Measures of center and dispersion</li> <li>Probability density functions and area</li> <li>Transformation of univariate data</li> </ul>	<ul style="list-style-type: none"> <li>Use the mean, standard deviation and z-scores to make probability statements about normally distributed variables.</li> <li>Connect probability density functions to real-world probabilities</li> </ul>	<ul style="list-style-type: none"> <li>Homework</li> <li>Classwork</li> <li>Projects</li> <li>Portfolio</li> </ul>	S-ID 2,3,4
Production Variation	2 weeks	<ul style="list-style-type: none"> <li>Production variation</li> <li>Industrial processes with consideration of variability (tolerances)</li> </ul>	<ul style="list-style-type: none"> <li>Understand how different types of errors, variation and real world factors affect properties of distributions and their use in research and design.</li> </ul>	<ul style="list-style-type: none"> <li>Homework</li> <li>Classwork</li> <li>Projects</li> <li>Portfolio</li> </ul>	S-ID 1,2,3,4
Bivariate Linear Models	2 weeks	<ul style="list-style-type: none"> <li>Distinguish correlation from causation</li> <li>Understand qualitative lines of best fit</li> <li>Least-squares line</li> </ul>	<ul style="list-style-type: none"> <li>Represent bivariate data and linear models graphically</li> <li>Create qualitative best-fit linear models</li> <li>Compare models using sum of squares</li> </ul>	<ul style="list-style-type: none"> <li>Homework</li> <li>Classwork</li> <li>Projects</li> <li>Portfolio</li> </ul>	S-ID 6,7,8,9
Variability and the predictive value of a model	2 weeks	<ul style="list-style-type: none"> <li>Residuals</li> <li>Variation around a line</li> <li>Correlation coefficient</li> <li>Coefficient of determination</li> </ul>	<ul style="list-style-type: none"> <li>Compute and plot residuals by hand and with technology</li> <li>Use residuals to identify non-linear patterns, uniformity</li> </ul>	<ul style="list-style-type: none"> <li>Homework</li> <li>Classwork</li> <li>Projects</li> <li>Portfolio</li> </ul>	S-ID 7, 8,9
Non-Linear Models	2 weeks	<ul style="list-style-type: none"> <li>Exponential models</li> <li>Quadratics</li> <li>Power models</li> </ul>	<ul style="list-style-type: none"> <li>Determine when/why non-linear models are appropriate</li> <li>Explore transformations between linear and non-linear models</li> </ul>	<ul style="list-style-type: none"> <li>Homework</li> <li>Classwork</li> <li>Projects</li> <li>Portfolio</li> </ul>	S-ID 6,7,8,9